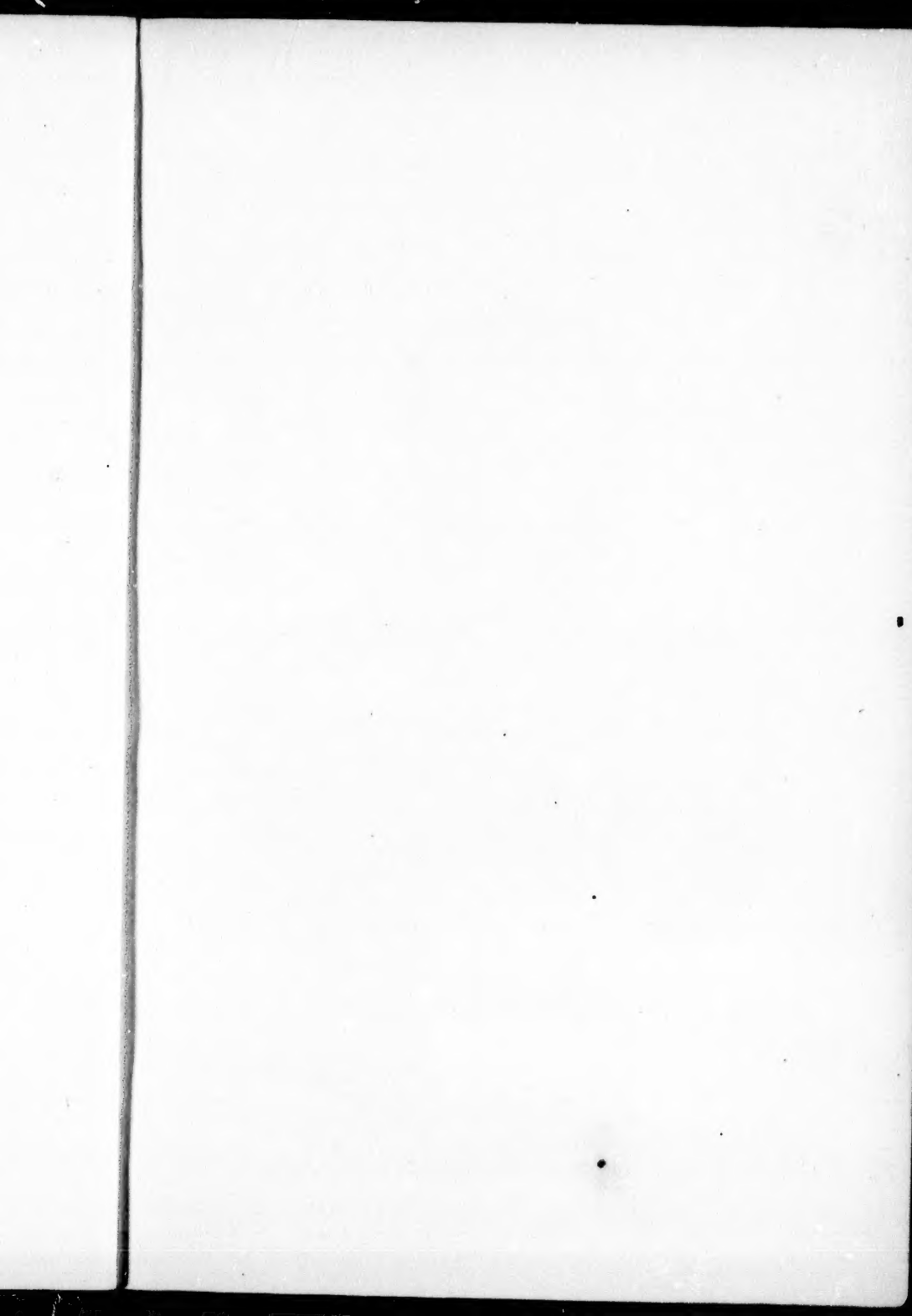


AT HOME
IN
THE WILDERNESS

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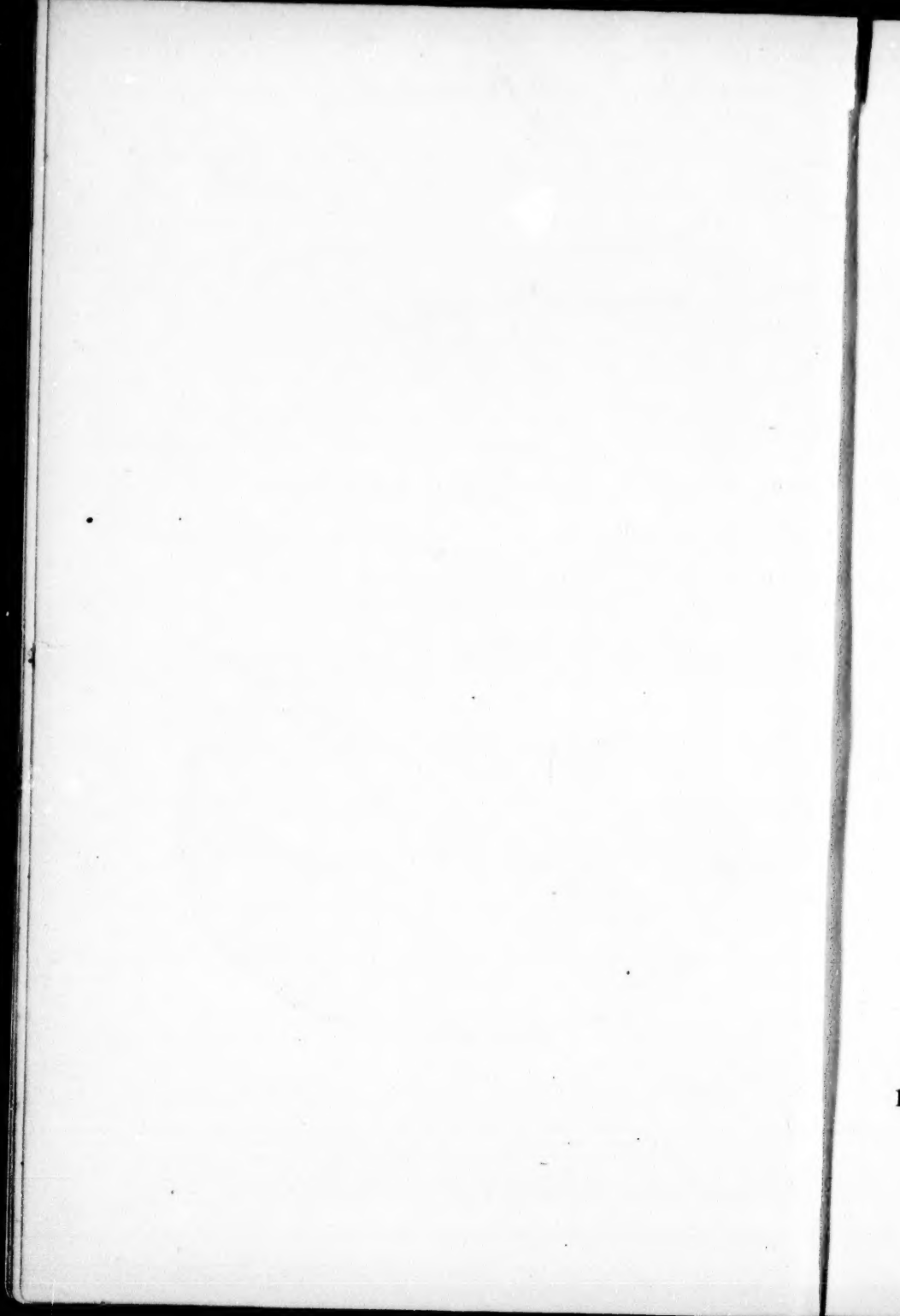
Yours faithfully
J. K. Lord

AT HOME
IN THE
WILDERNES
BY
The Wanderer



LONDON:
ROBERT HARDWICKE, 192, PICCADILLY.

1837.



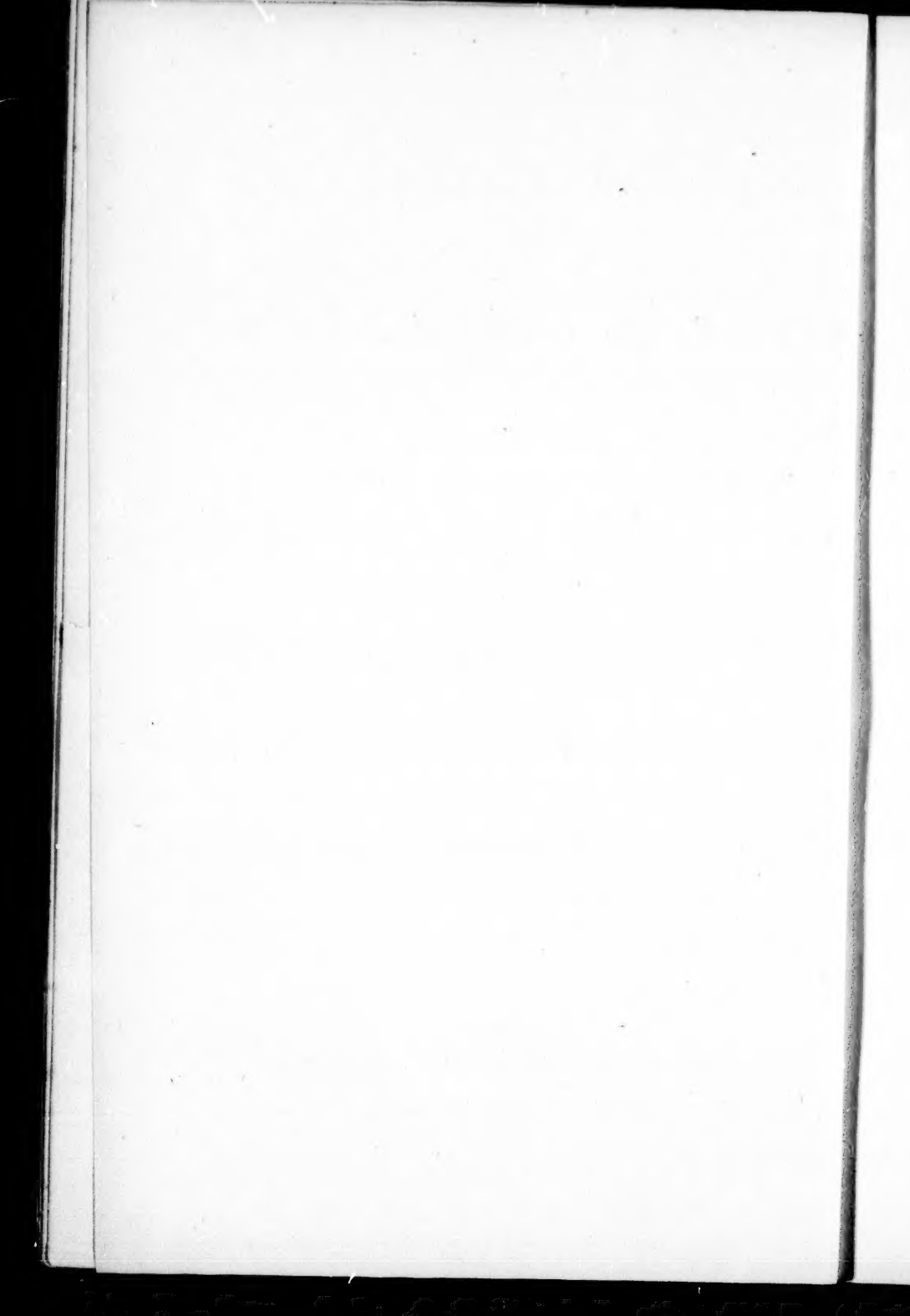
AT HOME
IN
THE WILDERNESS

BEING FULL INSTRUCTIONS
HOW TO GET ALONG, AND TO SURMOUNT ALL
DIFFICULTIES BY THE WAY

BY
'THE WANDERER'

Second Edition

LONDON
ROBERT HARDWICKE, 192 PICCADILLY
1867



TO

H. R. H.

THE DUKE OF CAMBRIDGE

FIELD MARSHAL IN THE ARMY AND
GENERAL COMMANDING IN CHIEF,

K.G., K.P., G.C.B., &c. &c.

This little Work

IS, BY PERMISSION, MOST RESPECTFULLY DEDICATED

BY

HIS ROYAL HIGHNESS'S

MOST HUMBLE SERVANT,

JOHN KEAST LORD.

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LORD, JOHN KEAST

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INTRODUCTION.

WHERE and when to camp; how to equip and manage a train of pack-mules; break, gear, and saddle wild horses; cross streams, build log shanties, trenail a raft, dig out a canoe or build it with bark or hide, manage dog-sleighs, and tramp on snow-shoes; what to carry and what to leave at home; or, to sum up in a few words, the way to get through a wild country as one ought, by adopting the better means of doing that which has to be done, are matters of no trifling value to travellers of all denominations. There are details that a novice cannot possibly acquire, save it be from the past experiences of other travellers, or, failing assistance such as this, he must learn his lessons in the field and forest by finding them out for himself, always a tedious, unsatisfactory, and very expensive process. Believe me, in travelling, as in

everything else, there is a right way and a wrong way of going to work, and, for some inexplicable reason, 'young beginners' are strangely predisposed to follow the latter course.

The experience of twenty years passed as a Rambler in various parts of the world, though principally as trapper, hunter, and naturalist, East and West of the Rocky Mountains, enables me to state from actual observation, that a 'green hand,' to use a slang term, on his first visit to a wild country, in nine cases out of ten arrives from the land of civilisation completely hampered, entangled, and weighed down, so to speak, with a medley of utterly useless things, which he never would have purchased had he been guided or directed by any person who knew how to travel.

Again and again, friends and strangers have sought my guidance, when fitting out to travel, either in the pursuit of sport and pleasure or to seek a fortune in far-off lands as emigrants. Hence I am induced to offer a few practical hints on the general details of travelling, trusting the rough suggestions I shall offer may prove of use to those who are disposed to venture into a distant country wherein wheels, steam, iron

and macadamised roads, are unknown luxuries; and in which, as a Yankee once said to me, in reference to Southern Oregon: 'Stranger, you bet your bottom dollar a man has to keep his eyes skinned, his knife sharp, and his powder dry, or he'll hav' his har ris'd, sure as beaver medicine, if he travels thim parts.'

JOHN KEAST LORD, F.Z.S.

Late Naturalist to the British North American Boundary Commission;
Author of the 'Naturalist in Vancouver Island and British Columbia.

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AT HOME IN THE WILDERNESS.

CHAPTER I.

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Pack Animals thin—'Points' of a good Pack Mule.

I SHOULD like to know who is able to boast a more
perfect independence than is he who has learned the
art, for *art* it most assuredly is, of being 'at home in the
wilderness.' What cares such a one for quarter-day;
no flinty-hearted landlord threatens to sell him up if
the rent is not paid; that terrible man, the tax-gatherer,

has no terrors for him, and never 'just looks in' with his ugly book and an ink-bottle dangling from the coat button, for his little account, which it is not at all times convenient to pay. All the collectors that ever were, or ever will be, could not in the wilderness cut off your water supply or stop your light. I quite agree in opinion with that dweller in the wilds, who, when the newly-arrived settler boasted that the sun never set upon England's possessions naively replied, 'Wa'al stranger, that ar likely enough, kase 'tis low'd by all as cum from thim parts that the tax bos never camps down to sleep.' At home in the wilderness in right good earnest you live rent free, pay no taxes, get fuel for the trouble of cutting it, and water and light without paying a rate; though surrounded with an abundance of fish, flesh, and fowl, you are free from meat bills, nothing to lock into your house, and no thieves to lock out; front door and latchkey are useless incumbrances; you wear what you like, do what you like, go out when you like, come home when you like, snap your fingers at 'Mrs. Grundy,' and care less for her evil tongue than the bite of a mosquito.

To feel that one is at home, though it be in the wilderness, is always to me a great source of pleasure. What household word is more cherished than is that of home? How delightful are all its associations, in it how many hopes and joys are hidden; the woods and

streams dear to us in childhood, the hoary hills and flower-decked meadows, the old church spire grey with lichens, the Sabbath bells that were wont to peal so softly down the valley, are but a few of the links which unite us to home. Happy memories not to be counted cling round about it like trailing vines, and living garlands of brilliant blossoms encircle the brown, sombre, branchless trunks of tropical palms, adding to them beauty and usefulness, as prattling children cling to their parents and make the father's right arm stronger. 'No tongue shall tell what bliss o'erflows the mother's tender heart while round her the offspring of her love lisp her name.' Or to employ a more homely simile, as the ivy enwraps the crumbling ruin and entwines its evergreen arms round the sturdy oak, in like manner the remembrance of home with all its treasures winds itself at all times round the heart of the absentee, nor need there be ancestral mansions, broad lawns, acres of woodlands, rich pastures, fertile orchards, and gardens, to recall household joys, or to mark the spot wherein they abide: not a bit of it. Home is not shut within narrow limits, is not confined to scenes of pleasure, regal splendour, or the dwellings of the great. Wherever warm hearts are to be found together, with contentment and a hearty desire at all times to do the best that can be done under existing circumstances, health and strength, a will to work, and an unwavering trust in God who

cares even for the sparrows, there believe me exist the primal elements, the magic of home.

‘Mankind, however fettered and benighted ;
Howe’er oppressed by penury and care ;
Have their existence by *one* beacon lighted,
Have still *one* bliss which all may freely share.’

A novice finds travelling terribly perplexing, because he has no idea of making himself at home, neither does he discover until stern necessity stares him in the face how absolutely requisite it is to cultivate a habit of observing. He must train his eyes until his sight equals in delicacy of perception the touch of the blind. Trifles imperceptible to the tyro are to the practised traveller pages of information, as easily read and comprehended as are those of a printed book. His tread should be light and stealthy, so as to avoid cracking fallen branches unnecessarily or rustling the bushes ; nothing should escape his attention. The disturbance of insects, the switch of a tail, the flap of an ear, the gleam of an eye, a displaced stone, or a broken twig, are matters not to be passed lightly by. He must educate his ears too. The voices of birds, the calls denoting love and anger made by different animals, the hum and buz of insects whether loud and angry, as evidencing annoyance and irritability, or soft and low as indicative of peaceful security ; the sough of the breeze and the roar of the torrent must be to the cultivated hearing of the dweller in the wilderness as understandable as

different musical notes are to the ears of a practised musician; and to some extent he must be a musician and ventriloquist of a certain kind himself. He must acquire the art of imitating sounds; the amorous bellow of the lady moose-deer to attract her lord, the plaintive 'bleat' of the fawn to lure the doe, the 'call' of the wild turkey, and the whistle of the beaver and marmot, are a few examples selected from a goodly number to show that to be at home in the wilderness demands that the dweller therein, to be successful in the pursuit of game, must needs be a skilful imitator of forest sounds.

Be it my pleasant duty to act as guide and instructor to all who may feel disposed to wander through far away lands. Come then with me now, in imagination—

'To craggy mountains, where the hunter buildeth
His fragile dwelling like an eagle's lair :
To southern climates, where the sunlight gildeth
The vine-clad hills with colours ever fair.
To far off lands, where the savage roameth,
The untutored lord of many a scene sublime :
To groves and glens, to where the ocean foameth ;
To every country and to every clime.'

We shall have rough roads and narrow trails to travel, deep and swift-flowing streams to cross where boats and bridges are as yet unknown; we must learn to build our own houses and provide our larder with meat, and how to cook it and provide the requisite fuel.

We must wield the axe, paddle our canoe, lasso wild horses and 'gentle,' and ride them when captured; it is necessary also that we should be able to 'pack' either mules or horses, yoke and drive oxen and manage a team of mules, tramp on snow shoes and harness dogs to a sleigh; but we shall find out all we have to do as we jog on our way. And if on the completion of our imaginary wanderings you have learned to make yourself at home in the wilderness, the Wanderer will have fulfilled all he set out to accomplish as guide and instructor. I have introduced a short story here and there which will serve to illustrate the district we are travelling through, as well as the character of the savages we shall have to encounter; and it will, perhaps, too, lighten the tedium of continuous telling what to do and what to leave undone.

The general equipment of a mule-train, or pack and saddle horses, if mules are not to be procured, forms by no means the least valuable part of the experience which it is absolutely requisite a traveller should possess. Packing means putting anything and everything, irrespective of shape or size up to a weight of 300lbs., on mule or horseback, and so fastening it that it shall neither rock nor sway from side to side, shift backwards up-hill or forwards on a descent, or fall off if the animal carrying the load stumbles or even rolls down a hill-side. The same remarks will apply whether the pack-train consists of four mules or one

hundred. Mules are far preferable to horses for all purposes of transport. And so let us begin by supposing that we are, say in Upper California, 'fitting out' for a trip through Southern Oregon, to cross the Rocky Mountains.

First and foremost, mules must be purchased if we mean to travel comfortably. If our party does not exceed three, we shall require five pack-mules, two riding mules for the packers, three riding mules for ourselves, and a bell-mare to be ridden by the guide or the cook, or any outsider attached to the party. In selecting mules, when purchasing always choose geldings or 'machos,' as they are usually styled, in preference to mares. The former are invariably much stronger, keep in better condition, and are far less liable to those aberrations of temper which lady mules are in the constant habit of displaying, much to the packer's annoyance and discomfort. Be sure to examine carefully the back, arch of the ribs, under surface of the tail close to the rump, hoofs, and eyes. If you discover the evidences of previous sores on the back or sides, especially if the skin covering the spot or spots looks shiny and polished, have nothing to do with the mule; the greatest care will not prevent regalling, and a sore-backed mule is worse than none at all, because the poor animal travels in pain and misery all day, if loaded, and gets no rest or a chance to feed after the day's work is done, in consequence of the ceaseless persecution inflicted by

swarms of flies ; and, what is far worse, magpies, if any are about, will be pretty sure to perch on the back of the chafed animal, and clinging on by their sharp claws, peck away at the sore with a sort of fiendish delight. During our work, when marking the Boundary line, we had several mules and horses seriously injured by the magpies, the packers having incautiously turned the animals out with sores exposed. I observed one of our mules on the Sumass prairie, near the Fraser River, British Columbia, rolling madly, but was at a loss to imagine the cause. As I stood quietly watching him he got on his legs, but no sooner was he up than a couple of magpies which I had not previously noticed issued from an adjoining bush, swooped down upon the luckless mule, and commenced again what they had clearly just left off, literally, and not in mere figure of speech, to eat him alive. Vain were all the tortured beast's writhings, kickings, and attempts by mouth and tail to displace the greedy birds ; they hung on with a perseverance certainly worthy of a better cause. Rolling was his only chance, but even then his persecutors simply hopped off patiently to bide another opportunity.

Too much occupied to notice my approach, the two gourmands permitted me to get within range : a shrill whistle sent them hurry-scurry from their horrid banquet, for which they paid the penalty of their lives ; I shot one with each barrel. Their beaks, as I picked them up, were reeking with the blood of the mule, and

in one was still grasped a bit of quivering muscle. We had in our employ a quaint specimen of the thoroughbred woodsman; old 'Pine-knot' we styled him, in compliment to his toughness or powers of endurance; in other words, he combined within himself the various crafts of gold-washer, axeman, hunter, packer, trapper, and rowdy in general. He hated magpies nearly as much as he loved whisky, and invariably tried his best to destroy every one he saw. 'Darned cusses,' he used to exclaim, 'they'd as leve eat a Injun as a hoss, and that's more nor a skunk ud do, you may bet high on it.'

To return to our subject. These several causes rapidly produce loss of condition, and the probability is the mule will either have to be shot or abandoned; the former being by far the more charitable course, and one I should always advise. I have several times discovered abandoned pack animals in a most pitiable condition. Once I remember finding a mule on a small open patch of prairie land in Oregon, which had been left by its owners in consequence of a stake wound just above the hoof having produced such excessive lameness as to render further rapid progression impossible. Blowing flies soon found out the sore, laid their eggs, which were rapidly developed into larvæ, or maggots in plain English, and these had burrowed in every direction, betwixt the horny hoof and bone, consuming what is equivalent to that most exquisitely sensitive tissue, commonly called in man 'the quick of the nail,' whilst

the helpless animal lived. It makes my heart ache even now when I recall its look of agony as on three legs the poor beast limping along said, in language quite as intelligible as articulated words could have been, 'In pity help me.' On examining the foot, I found the hoof was almost detached from its union with the adjoining tissues, which were being rapidly devoured by the maggots. What was to be done? No system of treatment which I could have adopted would have been of the slightest avail. Charity whispered, 'End its sufferings as speedily as you can,' which I did by sending a bullet through its brain.

I could recount many other instances of finding deserted animals enduring horrible sufferings, but this one will suffice; and I have related it with a view to induce those who read these lines (should they ever have occasion to abandon an animal) to kill it at once. As a general rule it is far more humane than to give an animal 'a chance for its life.' You ask, why it is desirable to look underneath the tail? Because 'crupper cuts' are of common occurrence, and when once a mule's tail has been badly cut by the sawing motion of the crupper it never properly heals, and although the wound may be skinned over, so as to escape the eye of an inexperienced buyer, still no person accustomed to packing would purchase a mule if signs of 'crupper-cut' were discoverable.

If the hoofs are worn very much, and the sole and

frog come flat upon the ground, or if old cracks are to be seen about the coronets, or if a ridge or ridges of bone encircle the coronet, commonly called 'ring-bone,' have nothing to do with the mule; he will be sure to work lame the first rough ground you drive him over. Badly worn hoofs are usually composed of weak poor horn, and when the wear brings down the lower edge of the outer horn to its union with the horny sole, small fragments of gravel are apt to work in, often causing an incurable lameness. A good hoof should be black, very oval, and hard as flint. Shoeing pack animals is all very well, if you can find a shoeing smith, and afford to pay him a dollar (4s.) a shoe; hence shod animals are seldom seen; now and then a favourite riding mule or horse may be indulged with a set of shoes, if a rough country has to be travelled over.

The Commission mules and horses were always shod, but then we had our own soldier shoeing-smiths, and could afford to do it. One thing I am quite sure of, shod mules are capable of enduring greater fatigue, carry a heavier weight, and travel much faster than do those which are without the iron protection to the feet. A light shoe, turned up at the heels, steeled at the toes, and put on firmly with eight nails, is the kind of shoe I found to answer best for general purposes. Turning up the heels prevents slipping when going down steep trails, and saves the flat part of the shoe from a great deal of wear.

A rigid and most careful scrutiny of the eyes is a first necessity. To examine them, stand at the mule's side, shade the eye to be examined with your hand and look through it from corner to corner, then place yourself in front, and peer into the interior of the eye as you would into a well if seeking for truth at the bottom of it. Should you discover any pearly-looking specks, like tiny white beads, at once reject him. Mules are extremely liable to 'cataract,' and a mule with defective vision is dangerous to a degree; not only does he risk his own life, by shying on narrow trails, and perhaps falling over a cliff into a river, or down a vertical wall of rocks, nobody knows where, with the freight and packing gear; but by suddenly backing or halting, the mules following close to him are stopped suddenly, trails being very seldom wide enough for one mule to pass by another. The hinder mules in the train, immediately there is a halt, as if actuated by a vicious determination to push each other over, crowd on upon those that are obliged to stop in consequence of the semi-blind mule refusing to proceed, from dread of some imaginary object, produced by defective vision. The result of all this usually is, that two or three good mules may be either killed or dangerously hurt, in consequence of your purchasing a bad mule with unsound eyes.

Another thing a dim-sighted mule does is to run against the trees with his load, and if he happens to be carrying a box, or anything breakable, smash it goes,

to a certainty. In examining large bands of mules, in California and elsewhere, when purchasing for the Government Boundary Commission transport, I was astonished to find so many had 'cataract.' Why this should be I cannot tell, excepting the disease is inherited. Old and worn-out mares are frequently, though unwisely, thought good enough to 'raise' a mule from; and over-ridden 'mustangs' are usually turned out to take their chance in wet or cold, and from this cause are extremely liable to inflammatory affections of the eyes, which generally ends in the formation of 'cataract.' Hence, I am disposed to attribute the frequency of the disease, in young mules, to inheritance; although blows from the packers' whips, or ophthalmia produced by cold and exposure to inclement weather, may be, and I feel sure often is, the cause of the disease in older and hard-worked animals.

We complete our examination by taking a peep at the teeth; it is very seldom pack-mules will allow any liberties to be taken with their mouths, and they always manifest a very decided objection to showing their incisors. If you have a quiet horse to deal with, nothing is easier than to place a finger behind the tusk, or tush, or in the space betwixt the grinding and cutting teeth if it be a mare, then to raise the lips with the left hand, and by the wearing down of the 'marks' find out the age; but with ill-disposed mules the case is altogether different, you might as reasonably expect

to pull your finger from the snap of a steel trap unscathed as for it to escape from out a mule's mouth without being bitten. Tame old riding and team mules are often docile enough to permit any liberty to be taken with them, but never trust one that is used only for packing. The safer way to manage the rascal, so as to be enabled to look into his mouth, is first firmly to seize the near-side ear with the right hand, and with the left hand grasp the upper lip, nose and all, then lean the hip against the mule's shoulder and bring the nose toward you. In this way one can generally obtain a peep at the front or incisor teeth.

By keeping the hip jammed tightly to the animal's shoulder you avoid the risk of its striking you with the fore feet, for let me tell you these pack animals are quite as handy with their fore hoofs as a prize-fighter is with his fists.

It is not of any material moment to know whether a mule is three or five years old, so that you know he is not very aged. For packing, I prefer mules between five and seven years old to younger animals. There is yet another reason, besides that appertaining to age, which render a scrutiny of the mouth indispensable. What are called 'parrot-mouthed' mules are far from being uncommon; in this case the upper cutting teeth overlap, and instead of meeting, shut down outside the under ones. This deformity is most objectionable; experience has proved that wherever grass is short,

or the general herbage scanty, parrot-mouthed mules invariably lose condition.

Here will be as good a place as any to caution all young travellers against 'working their pack animals thin.' So long as mules retain their rotundity and plumpness, the sure signs of good condition, there is very little fear of galling them, unless it happens or arises from the most reprehensible carelessness on the part of the packers; but let your mules once get thin, from over-driving, over-loading, or from either of the causes previously pointed out—which faults should, or at any rate ought to have been discovered in the examination prior to purchasing—and all the care and skill the most practised hands are able to adopt will not prevent the occurrence of galled backs and chafed ribs.

Numbers of mules in large pack trains are found by their packers to 'work thin,' from some cause or other not discoverable. Such animals are always discarded, and when placed in pasture where the grass is long, there, with plenty to eat and nothing to do, they soon fatten, and are finally disposed of to the unwary. A pack mule should be short upon the legs, strong and rather arched along the back, thick in the shoulders and muscular about the loins. The hoofs should be small and black, and the hocks straight and fine, without any tendency to bend inwards, or what is technically designated 'cow-hooked.' He should have bright full eyes, sharp teeth, a good long swishy tail, and a sound skin.

CHAPTER II.

Average worth of Pack Mules—Mortality in Cold Regions—Poisonous effects of the Horse-tail Rush (*equisetum*)—Advantages of Sheds and Dryth—The Bell-mare—Value of a Horse's Tail—Branding.

WE have fixed on the mules we intend to purchase, and agreed with the seller as to the price to be paid, which, on a rough average, will amount to about 120 dollars (25*l.*) to 150 dollars (30*l.*) per head. If mules are purchased in Sonora or Texas, unbroken, or only partially tamed, and driven up into California at the buyer's risk, they may be obtained at a much less cost than I have quoted as the average price current in Upper California. I was sent from Vancouver's Island into California especially to purchase a band of eighty mules for the Boundary Commission, which cost, one with another, 120 dollars per head. Like all other marketable matters, mules rise and fall in value, in accordance with the demand and supply, or in the ratio of successful gold-hunting. Whenever mining is prosperous mules are dear; when the miners are 'down upon their luck,' mules can be obtained at comparatively small prices. 17

In cold regions the mortality is something awful during the winter, and in that way the value is often increased. It may be interesting to mention as an instance of this, and as an example how differences of food and climate affect mules, which are generally supposed to be hardy to a proverb, (a most erroneous idea, by the way), that during the time we were at work on the Boundary line, west of the Cascade mountains, the gold discoveries on the Fraser River 'Bars' attracted a vast concourse of miners, and consequently mule trains, for the purpose of supplying the diggers' necessities. When the cold weather came on the mule trains were, nearly every one, driven down to the Sumass and Chilukweyuk prairies, in order to winter the animals. The grass was in great abundance, and small sheds were run up with 'wickey and mud,' (twined branches plastered with clay or mud), to protect the mules, whilst the owners or packers in charge built themselves log shanties; and thus provided, no apprehensions were entertained but that all would go on as 'merry as a marriage bell.'

But the too sanguine Californians little dreamed what the winters were like in British Columbia; snow rapidly covered up the grass far too deeply for the mules to dig it away with their feet, in order to reach the buried herbage. No dry fodder had been provided to meet this contingency, so, in the absence of all other kinds of foliage, the hungry mules began to devour

the large patches of *equisetum*, or horse-tail rush, which covered many acres of ground under the trees, by the river side, and around the swampy edges of the bush; being in a great measure protected by the trees, and growing often to a height of six feet, it was easily comeatable above the snow. The effect of this plant was perfectly astounding. As soon as the mules began to eat it they were seized with a disease precisely resembling Asiatic cholera; the most violent purging came on, accompanied with cramp, rigors, utter prostration, and speedy death. More than five hundred mules died on these two prairies in less than a month. What the cause of this poisonous effect might have been I am puzzled to say. My impression at the time was, that the animals' stomachs and intestines being comparatively empty, and at the same time the general tolerance of the system being further weakened by the excessive cold and lack of requisite food rich in carbon, the flinty covering of the rush acted mechanically as a mineral irritant to the mucous lining of the alimentary canal, producing dysentery of a most violent character. This is simply a theory, and must be estimated only as such. I mention the fact incidentally as a warning to travellers, who may perchance be placed in a like disagreeable and ruinous position. I have often seen the mules eat this horse-tail rush during the summer, when mixed with other food, and then no ill effects accrued from it.

I wintered all the Commission mules and horses during the following winter on the same prairies, and with signal success; but I had grown wiser by having witnessed the misfortunes of others. So I took the precaution to have a requisite supply of the long grass mowed and converted into hay during the summer, and likewise a supply of barley safely housed in a log store, which grain was brought all the way from Chili to Vancouver Island, and thence up the Fraser and Sumass rivers, by boat, to be finally landed on this desert prairie. I had a large square enclosed with open sheds, in which the animals were fed and kept, being driven out only to ice-holes cut in the stream, twice every day, to drink.

The grand secret of wintering animals successfully in very cold districts is, I am convinced, to insure their always having a dry bed to lie on, and shelter from anything falling from the heavens. Cold, however intense, (I have wintered mules, horses, and cattle when the temperature has been 32° below zero), never does them any harm, so long as their bodies are dry and they have plenty to eat. Wet and currents of frosty air do all the mischief, not the intensity of dry cold. Every one of my animals living in the open sheds were healthier, and less predisposed to colds and lung affections than were those more closely shut up.

After this little digression, we must go in pursuit of the next essential, and that is a 'bell mare.' With a

train of mules, if the number of animals composing it exceeds three or four, you must have a 'bell mare.' A small band of mules can be either lobbled or tethered when you are camping; with a large number this system is impracticable. Experience has taught the packers that mules will follow a mare or gelding, (the former being always preferred), should it have a bell tied round its neck, wherever it goes; more than this, at night, when camping, all you have to do is to secure the 'bell mare,' either by hobbling or tethering her, and the mules will very rarely graze further away than they can distinctly hear the bell, which is always tinkling so long as the mare is eating or wandering about. When the bell ceases, in consequence of the mare's lying down, the mules also lie down and take their rest. When the mare gets up, and the bell begins to ring, the mules also arise and again commence feeding. The 'bell mare' always precedes the mule train, and is ridden by the cook as a rule. Her pace regulates that of the train, and must be most carefully watched by whomsoever has the charge of the train. Over-driving, as I have before said, is most hurtful to loaded animals.

From what I have stated in reference to this said 'bell mare,' it is quite clear we must be very careful in the selection of the lady to be honoured with such an unruly family. In the first place she must be perfectly gentle, and not very young; young mares are given to ramble and very often get amorous fits.

Whilst this lasts, all discipline is to a great extent at an end amongst the pack of mules; they one and all (that is, the geldings) become like Ingoldsby's abbot, when seated by the devil, disguised as a fair lady, 'less pious and more polite.' She must not be vicious or given to kicking. A light grey, if we can get her of that colour, is by far the best, because she is much more readily seen, when browsing among trees; and about fourteen hands, or fourteen hands two inches, is the more preferable size. Her back must be free from galls, her eyes sound, and, what is of more value than you who have not earned experience can well imagine, she must have a very long, thick, and bushy tail: a short-tailed mare is sure to wander, if she can, or keep fidgeting all night long; if tethered securely the bell is never still, and the mules do not rest, whereas a long-tailed mare easily whips off the flies that so terribly torment animals night and day, and thus rests herself, and induces the mules to rest at the same time. I shall have more to say about the 'bell' when we come to camping, crossing streams, and packing. The price we shall have to pay for her will be about fifty dollars (10%), or perhaps rather more.

In proof of the value of a horse's tail, in a country infested with blood-sucking flies, I may state that I once, when at Walla-Walla, a small steamer-landing and town, situated at the head of navigation on the Columbia River, purchased a 'Siskyoo horse,' which

means a horse with its ears cropped short, like a terrier's, and the tail cut off close up to the rump. This is, or once was, a common custom with the Siskyoo Indians, and all horses so trimmed are designated by the generic term of 'Siskyoo.' The object of this barbarous custom was to enable these Indians easily to recognise their own horses if stolen, and subsequently discovered herding with other bands. Horse-stealing is the primary cause of nearly every Indian war and quarrel.

The poor 'Siskyoo' beast, although as perfect a cob as any man need have looked on, was nevertheless utterly valueless during the summer; unable to whip away his tormentors, they worried him with impunity, until want of rest and continuous irritation reduced him well-nigh to a skeleton. 'When found make a note of ——.' Always look out for long-tailed mules and horses in a fly-country.

I happened to stumble upon the following strange adventure during my stay at New Walla-Walla:—

'Colonel, I guess thar's two imigrants a waitin to see you, just a starvin, narry shoe on, and mighty near skeert to death.' So said Sergeant —— to Colonel —— as we sat at mess, on a cold bleak autumn evening, in the mess-room at New Walla-Walla.

'What may be their business, Sergeant?' inquired the Colonel.

'Waal, it aint easy to make out; thar Britishers, and talk tall about Injens, muder, and risin har, and ——'

'Very well,' said the Colonel, 'bring them to my quarters after they have been rationed by the Quartermaster.'

I may as well briefly explain, for the enlightenment of my readers, where Walla-Walla is situated, and by what sequence of events it happened that I was located in so remote a place.

The clear swift-flowing stream, with its double name Walla-Walla, so called by a tribe of Red Indians living on its banks, (the name, by the way, translated into English, means ever-bright and sparkling), winds in crooked course through a vast sandy plain, to mingle its waters with those of the Columbia River, at a distance of quite 700 miles from the sea. The steamer lands all adventurous wanderers who may chance to peril themselves in so desolate a country at *Old Walla-Walla*, which is the head of navigation on the Columbia, and *Old Walla-Walla* was once a fort, not as we are prone to picture a fort, battlemented and bristling with guns, but was simply a square enclosed by mud or adobe walls, containing a few miserable hovels, which were once tenanted by the fur-traders in the employ of the Hudson's Bay Company; but the Red Skins being by far too hostile to be trusted, or traded with, the fur-traders were eventually driven from their fort, the crumbling remains of which now only adds its own to that of the surrounding desolation. The traveller is turned out from the steamer to take his chance

of getting somehow to New Walla-Walla as best he can, by a four-horse machine called a *stage*. The distance is thirty miles straight over a treeless sandy plain, on which nothing grows save stunted wild sage (or *artemisia*), where there is no trace of a road, and the wind always blows in one's face, and being heavily freighted with fine sand, together with small pebbles, manages to discharge its cargo into the wayfarer's ears, nose, pockets, and will penetrate his watch if he is fortunate enough to possess one. Let him but venture to close his mouth, and the meeting teeth grind away upon a stratum of flinty sand, as though one had indulged in a scouring brick for luncheon.

The stage, tugged along by four horses, is so constructed with straps and springs as to be in reality a most ingenious contrivance for dislocating limbs and pitching a passenger head first against the opposite side of the unpadded interior, or into the stomach of a *vis-à-vis*, should there be any such unfortunate individual to be pitched into. The probability is, however, that the compliment may be returned at any unexpected moment if a tight hold-fast is not maintained by your friend opposite on the strong leather loops, which dangle in every direction, like ropes for the drowning, ready for any emergency.

If any one can endure this continued trapéze performance for about four or five hours, the probabilities are in favour of his reaching New Walla-Walla in about

the same condition as a person may be supposed to arrive at after being vigorously tossed in a blanket for a short time by muscular rustics.

New Walla-Walla '*city*' stands on a sandy shingly flat. The small amount of grass visible looks as dry as hay, and excepting a clump of dwarfed and stunted-looking trees, which seem so bent and emaciated that one is led to imagine the trees must have been the victims of a chronic rheumatism or a perpetual cramp, not a particle of any other wood is discoverable, as far as eye can scan the dismal extent of arid waste, in the very midst of which this '*city*' is built. Cities in this part of the world are only such in name; squares, terraces, crescents, busy streets, and massive mansions crowded with civic dignitaries are not by any means essential requirements. In this particular instance the *city* of New Walla-Walla consisted of not more than thirty houses, all constructed of unplanned planks or '*lumber*,' so called, the style of architecture, being solely in accordance with the tastes or inventive genius of the builder, of the most varied and questionable character, forcibly reminded one of booths on a race-course wherein thirsty pleasure seekers regale themselves, rather than of houses, a resemblance rendered the more striking by the motley throng riding, lounging, and sitting in groups, amidst the houses in the '*main*' street, a straight dusty thoroughfare, towards which most of the houses faced. I enter a gaudy bar-room

all aglitter with tinselly finery, bright-coloured glass bottles, and small brigades of decanters fitted with strange-looking stoppers which let out the contained poison, disguised as whisky, by a kind of machinery, and near them arrays of smeary drinking vessels stand in quartets, together with jugs of cold water like sentries ready by. At the shortest notice drinks can be indulged in; for all classes in Walla-Walla city, if in possession of the all-powerful dollar, take drinks. On every occasion a man imbibes: when he is sorry, when he is joyful, when swamped by disappointment or floated by prosperity. Men cement their friendships with gin cock-tails and juleps, and terminate acquaintances and disagreements in a 'Brandy Smash.' The mourner drinks with those who do not grieve, and they drink simply because the mourner asks them. If the goddess of Liberty were seen strolling through Walla-Walla I feel sure somebody would immediately ask her to take an eye-opener. Behind the bar-counter a gorgeous individual is conspicuous at all times, radiant in smiles, shirt front, studs and rings, whose greatest accomplishment appears to consist in the ability to toss cold drinks from one tin cup into another without spilling any. He usually has an immense cigar 'stowed' away in the corner of his mouth, one half of which is chewed, whilst the other is puffed slowly away. Leaving the bar I see 'billiard saloon' in letters which he who runs can read, and wonder as well I may by what

means a billiard table could have been brought here, and still further, who the individuals can be who are likely to play on it. A peep in to the 'billiard saloon,' and the mystery at once ends. Why, everybody plays, from the darky boy who polishes your boots, or the barber who does the easy shaving, up to the colonel commanding the 'military post,' and it is just as likely as not, you may witness a match, if you sit and take a drink in the saloon, betwixt a 'bummer' with 'narry a cent' in his pocket, or clothes on his back worth pillaging from off a scarecrow, and a military officer in full uniform. Strolling still further through the city, stores, groceries, 'barbers' saloons,' livery stables, places alike all astir with the bustle of business, are respectively passed. This quaint little place, I am told, owes its origin to two causes, one the discovery of gold on the Cold-water and Burnt Rivers, tributaries to the Snake River, and both of which head from the slopes of the Blue mountains. Like the magnetic mountain of Sinbad's travels which dragged nails out of ships, and a man, if he had iron on his boots, straight up against its side, where he was held like a fly on a wall, so with speed or power as potent, the prospect of obtaining gold drew adventurers to New Walla-Walla, from whence they procured the necessary articles for fitting out, to sink or swim, in their struggles for fortune. The 'American garrison,' or 'military post,' is situate about a mile from the city on a patch of rising ground, close to a small creek

or 'crik,' as Transatlantics usually pronounce the word. A troop of dragoons, and three, or sometimes four companies of infantry, are usually stationed at this outpost, their duty being that of protecting settlers against Indian incursions. The soldiers are a great support to the citizens, notwithstanding the very admirable system adopted by the United States military authorities of having a *sutler*, or in other words, appointing a civilian, whose duty it is to supply all requisites to officers and men, up to a certain fixed amount, at a regular tariff, for which he is paid at the pay-table of the regiment. Should the sutler, however, trust any soldier to an amount beyond his pay he must lose it, the paymaster being only responsible for goods supplied up to the regulation amount. The sutler's store is always a great lounging place, and as he sells drinks, in some measure on the sly, it very materially lessens the crop of small coin which would be otherwise reaped by the Walla-Walla citizens, as the sutler being nearest to home gets the first produce, if not the entire harvest. The 'Post' was neatly laid out, in shape a very large square, the centre being the drill ground; the sides were appropriated to officers' quarters; barracks for the men, and the quartermaster's stores. All the houses were made of planks planed, painted, and fitted with very capital glazed windows. I was staying there for a time, the guest of the officers, awaiting means of transport to reach the dalles *en route* to Portland.

The Sergeant comes to the Colonel's quarters and says the two strangers are awaiting admittance, whose story I am all curiosity to listen to. As we await their appearance, the Colonel said, 'Captain —— I'll bet fifty dollars those rascally Snake Indians have been playing havoc again amongst the emigrants. If they have, as sure as I live, every loafer of them I catch shall ——.'

The door just then opened, and so cut short the Colonel's threat. Staggering from sheer weakness, and with travel-worn feet, two men, each about thirty years of age, tottered in, marshalled by the Sergeant. I need not be wearisome by relating, word for word, all that was said. Their sad story was briefly as follows. Early in the summer, a party consisting in all of forty souls, started from the Red River district, their purpose being to reach the rich valley of the Wilhamet River, therein to establish themselves, pre-empt farms, and reap the harvest its fertile land usually yields to all who industriously develope its agricultural capabilities. All were hale, hearty, and in the springtime of life, most of them being married couples and blessed with sturdy young olive branches. Their equipment was most complete, and carried, as were the women and children, in strong wagons, drawn each by six or eight yoke of powerful oxen. For many weary weeks this band of hopeful travellers had found their way along the barren route leading across the great American desert. Rivers were successfully swam or forded, rocky passes tugged and

toiled over; an occasional buffalo stalk or a tramp after a wapiti, were the only incidents which relieved the monotony of the journey. Indians were the enemies to be dreaded, but on the plains where the travellers fully anticipated seeing these marauders none had been observed. Hope, like a cloud with a golden lining, gleamed brightly and cheerily before them, as, deeming danger well nigh at an end, they wended their way down the craggy slopes west of the Rocky Mountains, to follow the course of the Snake River, and ford it at the only practicable spot, which is very near to its junction with the Salmon River, a crossing known as the 'Emigrants' Ford' of the Snake River. The long-desired fording place is at length reached, but too late to risk the somewhat dangerous task of crossing so swift a stream until the morrow's light lends its aid. The emigrants encamp on the bank of the river, and chat cheerfully by the flickering firelight of dangers surmounted, and hopefully of the easy journey before them. Once across the river they are safe, as the route is free from any further obstacle of importance to Walla-Walla. Their gossip is suddenly interrupted by the appearance of several 'Snake Indians.'

Not a little alarmed, the poor emigrants make signs of friendship, which the Red Skins readily return; they smoke the pipe of good fellowship together, do a little barter for meat and fish, giving in exchange tobacco and beads, and then the Indians vanish into the darkness

and are seen no more that night. As there were only a few savages, no great apprehension was entertained of an attack; still additional precautions were taken, and a sharp watch kept during the night, so as to avoid any chance of a sudden surprise. The dreary hours of the night one by one rolled by, until the grey light in the east, tipping as with frosted silver every peak and ridge, proclaimed the advent of another day. Everything was still, no sign of savages visible, nothing but the mellow notes of some early songster, the weird wail of the loon, or the thrum of some benighted beetle, hurrying home to hide ere the coming light betrayed him, disturbed the stillness of surrounding nature. The sentries rouse the sleepers, most of them far away in dreamland, amidst friends and parents; others in fancy perhaps are wandering once more in the paths so often trodden afore-time, amidst fields and flowers, listening it may be to the prattlings of infancy or the healthful mellow voices of youth, scenes alike deeply engraven on memory's tablets, and rendered dear to the dreamer by a thousand and one pleasant remembrances.

All are up and busy, the men yoking the oxen and preparing to ford the river; the women and children are occupied packing the camp and cooking equipment and preparing for the somewhat difficult process of ferrying the stream. The plan of crossing is to unload partly some of the wagons, and to attach a double or treble team of oxen to each. First of all the women and children are

taken across the stream and left on the opposite bank ; then the wagons, entirely emptied, are recrossed for the rest of the freight. So by slow and sure degrees, all hands, together with their worldly wealth, are safe on a grassy plateau which stretches away before them for about four miles, to reach the wooded slopes of a low range of hills, known as the 'Blue Mountains.' The sun was high ere the oxen were again yoked up. A short march only is contemplated, by way of reaching the timber, and crossing a low divide, in order to arrive at a rivulet of water running through a narrow valley on the other side, in which they intended camping—a favourite camping place for travelling parties, and known as the 'Emigrant Camp.'

Not a trace or sign of Indians had been observed during the morning, and in the buoyancy of their spirits, consequent on an imaginary safety, the little band of wanderers, forgetting to take even ordinary precautions, were riding along on their wagons, singing, laughing, joking, carelessly happy, dreading nothing. Suddenly, on nearing the thick pine forest, a yell, as though numberless demons were shrieking in wild delight, momentarily preceded the rush of some eighty mounted 'Snake Indians,' who, issuing in detachments from various openings in the trees, completely surrounded the wagon train, and fired a mixed volley of arrows and bullets in amongst the fright-stricken emigrants before they well knew what had befallen them.

Several dropped badly wounded, but the remainder fought bravely, so soon as they rallied from the sudden panic into which they were thrown; even the women fired from out the wagons at the ruthless Red Skins, but all to no purpose; one after another the men were shot down and scalped, the children killed, and the women dragged away to endure a fate too horrible to name. The oxen were speedily set at liberty, the wagons, despoiled of all the savages felt disposed to steal, were set on fire, and reeking with their bloody spoils the band of murderers rode away to the ford, driving before them every one of the bewildered bullocks.

The two men who related this harrowing story to the Colonel and myself managed to creep in to the bush during the *melée*, and when they saw the Indians decamp made the best of their way to Walla-Walla. The poor heart-broken fellows had subsisted entirely on berries, gathered as they walked along shoeless, foot-sore, starving and penniless—their wives murdered, childless, and broken in heart and spirits. Their terrible misfortunes would have awakened the sympathies of any man, if his heart had been of adamant hardness.

Further questioning elicited many small matters of detail which, linked together, rendered it extremely probable that there were women, if not men, surviving this brutal cowardly massacre; and that there was likewise a remote probability they might be found

if sought after. This decided on, the Colonel without a moment's delay made known the story; volunteers were not tardy in offering their services. Indeed I may truly say that the whole garrison to a man would have turned out if it could have been permitted, although the fall of the first snow was daily expected and the journey would necessarily be not cold only but an extremely risky one.

A chosen few were selected, and placed under my command. A small train of lightly packed mules were to accompany the mounted troopers, in order to carry rations, clothing for the women if any of them should be found alive, and the doctor's requisites, to be ready in case of need. One of the men who had escaped was also mounted on a powerful horse, and placed under the special charge of the kind old Sergeant, who begged so hard for leave to make one of the party, in order to help as he said 'jist to lynch up any darned skunk of a —— (imagine a strong adjective) Red Skin they could skeer up,' that the Colonel, though very reluctantly, at last consented. All these arrangements were soon completed in the morning, and with hearty wishes for our safe return and the deepest execrations human nature could devise levelled against all red skins, we trotted briskly out of the garrison square and away over the sandy plain, towards the Blue Mountains, dimly visible in the distance. As we rode through a small encampment of friendly Walla-Walla Indians we picked up a guide, a queer-looking old savage, well known at the military

post as a first-rate hunter and tracker, but, having naturally a rather grotesque twist in his vision, the familiar sobriquet by which he was usually known was that of Old Auger-eye. Taking his station at the head of the cavalcade, and being mounted on a remarkably fine skew-balled horse, most conspicuous for its distinct markings of white and rich red-brown, the Red man looked remarkably like the 'Wild Hunter of the Prairies' as he was once to be seen at monster shows,* only that the real hunter wore a ragged old uniform shell jacket and the broadest brimmed 'wide-awake' hat I ever saw, a costume which destroyed to some extent the 'Circus Wild Hunter' and Auger-eye's similarity.

It was very nearly dark when we halted to encamp; we had no tents, so each had to pillow his head on his saddle, and fit himself into inequalities of the ground as best he could. According to our guide's statement, we could not possibly reach our destination in less than four days from this, our first camp; and as the rivers were aflood, it might be that we should be detained an additional day, or perhaps more, in order to raft them. Thus sixteen or seventeen days would have elapsed from the time of the massacre; and if any of the women had escaped, it was more than likely they must perish from starvation before we could arrive with the needful succour. Still the very sight of the

* Circuses.

poor feeble man, shaken to the very centre with terror and grief, seemed to rouse the soldiers into ungovernable fury, and I felt quite sure if by chance any 'Snake Indians' fell into their hands, but little time would be given them for explanation or repentance. The orders were positive that all Indians taken alive should be brought back to the Post as prisoners, an order I well knew the soldiers would never obey.

Just as Auger-eye had predicted, two, nay nearly three days, were lost in rafting the horse and mule gear over the swollen streams; thus nearly a week had flown by when darkness compelled us to camp very near the scene of this terrible murder. Each watched eagerly for the first ray of dawn, no one appeared disposed to sleep, but preferred to sit moodily by the smouldering embers. Few sounds disturbed the intense silence of the night save the trampling of the tethered animals, the occasional snort of a horse as something tickled its nose, the continued munch-munch as they all greedily cropped the succulent herbage, the distant bay of the wolves, and now and then the startling shriek of the night owl as it skimmed with muffled wings over the silent group. I never remember so long a night; I began to think morning had put off coming at all, and really envied old Auger-eye, who was coiled up and sleeping for all the world like a dog. The wished for light came at last, and long ere the sun's rays came fairly over the hills we had 'saddled up' and were cantering

rapidly through the timber, to come out on the open plateau leading to the ford at the upper fork of the Snake River.

As we neared the line where the forest ended and the prairie land began, the pace increased to almost a race, each appearing to think he ought to be first to discover a survivor, or seek vengeance on a Red Skin. Hence it happened that every one selected a path for himself, and the detachment dashed from amidst the pine trees scattered like a flight of frightened birds. It was my fate, I cannot say good fortune, to emerge on the very spot whereon the terrible butchery had been perpetrated. Once in a lifetime is quite often enough to witness such a scene as I was in the midst of. Numbers of bodies of both sexes, many of them those of children, lay grim and ghastly upon the bright green grass in all sorts of positions. Vitality flown, chemistry had begun its work of destruction, and lending their aid as general removers of nuisances were vultures, ravens, wolves, and a host of lesser flesh feeders, together with their diminutive yet powerful assistants belonging to the scavenger brigade of the insect army. All the adults had been scalped, and many cleft skulls showed that the savages had brained with a tomahawk or hatchet the wounded and disabled. I will not sicken you by lingering here, it would be only painful to relate all the terrible evidences of brutality we saw, as wandering about amidst the dead bodies, cindered wagons, and

spoiled property useless to the savages, we realised to the full what a scene of carnage the fight must have been.

Whilst the men were occupied in digging a large pit, into which the remains of the dead were to be deposited, old 'Auger-eye' had been cautiously circling round the spot, and might be seen every now and then down upon his knees peering intently at the ground. At last he appeared to have discovered something; beckoning me, he at the same time pointed in the direction of the upward course of the river. All hands were so eager to learn what discovery the old tracker had lighted on, that persuasion and command failed alike to induce them to continue at the work on which they were engaged. Dropping their tools they crowded round the old man, and scarcely venturing to breathe, intently listened to what he was saying. In the figurative style common to all Indian languages, the old savage stated his opinion to be that three, if not four, white people had crossed the plateau after the fight, and by the appearance of their trail were making for the river. Children had accompanied them, but he could not say whether two or three. He also stated that he had made out, from a careful reading of Nature's book, that Indians had visited the place since the fight, and that in all likelihood they too had struck this same trail and followed it up the river. Their *signs* told him they had not passed more than three suns ago;

further, if the Indians had not discovered the fugitives, we should most likely capture the ruffians by dividing our party, sending some of them across the ford, to scout up the right bank of the stream, whilst others were to keep close to it on the side we were. A third party was ordered to make a short circuit through the bush and again strike in upon the river a few miles farther up its course, at which place of rendezvous the different parties would eventually meet. The opinion being unanimous that no time should be lost, it was arranged that some of the detachment should return on our homeward route, to complete the sad task so summarily abandoned.

Thirsting for a speedy revenge, the men at once divided. With Auger-eye as guide I took command of the detachment who had to search the river-bank; the old Sergeant commanded the scouting party told off to cross the ford and scour the timber, on the right side of the river; whilst the third band was appropriated to the Doctor. The weather was cold, and the sky, thickly covered with fleecy clouds, foreboded a heavy fall of snow. The wind blew in fitful gusts, and seemed to chill one's blood with its icy breath as sweeping past it went whistling and sighing up the glen. The rattle of the horses' hoofs as the receding parties galloped over the turf grew fainter and fainter, and when our little band halted on a sandy reach, about a mile up the river, not a sound was audible save the

steady rhythm of the panting horses and the noisy rattle of the stream, as tumbling over the craggy rocks it rippled on its course. The 'Tracker' was again down; this time creeping along upon the sand, on his hands and knees, and deliberately and carefully examining the marks left on its impressible surface, which to his practised eye were in reality letters, nay, even readable words and sentences. As we watched this tardy progress in impatient silence, suddenly, as if stung by some poisonous reptile, the Indian sprang upon his legs and making eager signs for us to approach pointed at the same time eagerly to something a short distance beyond where he stood. A nearer approach revealed a tiny hand and part of an arm, pushed through the sand.

At first we imagined the parent, whether male or female, had thus roughly buried the child—a consolatory assumption Auger-eye soon destroyed. Scraping away the sand partially hiding the dead boy, he placed his finger on a deep cleft in the skull, which told at once its own miserable tale. This discovery clearly proved that the old guide was correct in his readings that the savages were following up the trail of the survivors. The man who had escaped and brought us the intelligence appeared so utterly terror stricken at this discovery that it was with difficulty he could be supported on his horse by the strong troopers who rode beside him. We tarried not for additional signs, but

pushed on with all possible haste. The trail was rough, stony, and over a ledge of basaltic rocks, rendering progression not only tedious but difficult and dangerous; a false step of the horse, and the result might have proved fatal to the rider. The guide spurs on his Indian mustang, that like a goat scrambles over the craggy track; for a moment or two he disappears, being hidden by a jutting rock; we hear him yell a sort of 'war-whoop,' awakening the echoes in the encircling hills; reckless of falling, we too spur on, dash round the splintered point, and slide rather than canter down a shelving bank, to reach a second sand beach, over which the guide is galloping and shouting. We can see the fluttering garments of a girl, who is running with all her might towards the pine trees; she disappears amongst the thick foliage of the underbrush ere the guide can come up to her, but leaping from off his horse he follows her closely, and notes the spot wherein she has hidden herself amidst a tangle of creeping vines and maple bushes.

He awaited our coming, and, motioning us to surround the place of concealment quickly, remained still as a statue whilst we arranged our little detachment so as to preclude any chance of an escape. Then gliding noiselessly as a reptile through the bushes, he was soon hidden. It appeared a long time, although not more than a few minutes had elapsed from our losing sight of him, until a shrill cry told us something

was discovered. Dashing into the midst of the underbrush, a strange scene presented itself. The hardy troopers seemed spell-bound, neither was I the less astonished. Huddled closely together, and partially covered with branches, crouched two women and the little girl whose flight had led to this unlooked for discovery.

In a state barely removed from that of nudity, the unhappy trio strove to hide themselves from the many staring eyes which were fixed upon them, not for the purpose of gratifying an indecent curiosity, but simply because no one had for the moment realised the condition in which the unfortunates were placed. Soon, however, the fact was evident to the soldiers that the women were nearly unclad, and all honour to their rugged goodness, they stripped off their thick top coats, and throwing them to the trembling females, turned every one away and receded into the bush. It was enough that the faces of the men were white which had presented themselves so unexpectedly. The destitute fugitives, assured that the savages had not again discovered them, hastily wrapped themselves in the coats of the soldiers, and, rushing from out of their lair, knelt down, and clasping their arms round my knees, poured out thanks to the Almighty for their deliverance with a fervency and earnestness terrible to witness. I saw, on looking round me, steaming drops trickling over the sunburnt faces of many of the men, whose

iron natures it was not easy to disturb under ordinary circumstances.

It was soon explained to the fugitives that they were safe, and as every hour's delay was a dangerous waste of time, the rescued women and child were as carefully clad in the garments of the men as circumstances permitted, and placed on horses, with a trooper riding on either side to support them. Thus reinforced the cavalcade, headed by Auger-eye, moved slowly back to the place where we had left the pack train encamped with all the necessary supplies. I lingered behind to examine the place wherein the women had concealed themselves. The boughs of the vine-maple, together with other slender shrubs constituting the underbrush, had been rudely woven together, forming, at best, but a very inefficient shelter from the wind which swept in freezing currents through the valley. Had it rained they must soon have been drenched, or if snow had fallen heavily, the 'wickey' house and its occupants soon would have been buried. How had they existed? This was a question I was somewhat puzzled to answer.

On looking round I observed a man's coat, pushed away under some branches, and on the few smouldering sticks, by which the women had been sitting when the child rushed in and told of our coming, was a small tin pot with a cover on it, the only utensil visible. Whilst occupied in making the discoveries I was sickened by a

noisome stench, which proceeded from the dead body of a man, carefully hidden by branches, grass, and moss, a short distance from the little cage of twisted boughs. Gazing on the dead man a suspicion too revolting to mention suddenly flashed upon me. Turning away saddened and horror-stricken I returned to the cage and removed the cover from off the saucepan, the contents of which confirmed my worst fears. Hastily quitting the fearful scene, the like of which I trust never to witness again, I mounted my horse and galloped after the party, by this time some distance ahead.

Two men and the guide were desired to find the spot where the scouting parties were to meet each other, and to bring them with all speed to the mule camp. It was nearly dark when we reached our destination, the sky looked black and lowering, the wind appeared to be increasing in force, and small particles of half-frozen rain drove smartly against our faces, telling in pretty plain language of the coming snow-fall. Warm tea, a good substantial meal, and suitable clothes, which had been sent in case of need by the officers' wives stationed at the 'Post,' worked wonders in the way of restoring bodily weakness; but the shock to the mental system time alone could alleviate. I cannot say I slept much during the night. Anxiety lest we might be snowed in, and a fate almost as terrible as that from which we had rescued the poor women should be the lot of all,

sat upon me like a nightmare. More than this, the secret I had discovered seemed to pall every sense and sicken me to the very heart, and throughout the silent hours of the dismal darkness I passed in review the ghostly pageant of the fight and all its horrors, the escape, and flight of the unhappy survivors, the finding the murdered boy and starving women, and worse than all—the secret I had rather even now draw a veil over, and leave to the imagination.

Morning came with anything but a cheery aspect; every preparation was made for an instant departure so soon as the scouting parties should come in. As we await their arrival, the women fill up bit by bit the missing links in the narrative, which are—that they escaped from the Indians by creeping into the bush; and accompanied by the husband of one of the two women, badly wounded, together with a little boy and girl, they made their way to the water after the savages had departed; and from that time struggled on day after day, subsisting entirely on berries. The boy had wandered away, in hopes of finding food, but never returned—his fate we already know. The wounded man growing rapidly worse obliged them to abandon all hope of proceeding farther. Making the 'wickey' cage wherein we had found them, the women and child gathered berries and brought the dying man water, until the hand of death was laid upon him. The rest we are already cognisant of. The secret was never

touched on nor in any way alluded to, neither were the men ever made acquainted with it. To this hour the poor women, for aught I can tell, believe it is known solely to themselves.

The trampling of the approaching horses was a welcome sound. Emerging from the forest, the men trotted briskly towards us, and as they came near I could make out three mounted savages in the midst of the troopers; their hands were tied tightly behind their backs, and their feet fastened by long cords passed underneath the bellies of their horses.

The Sergeant reported having pounced upon the Indians unexpectedly in the bush; that they made every effort to escape; that one of them tried to stab a trooper, but only succeeded in inflicting a flesh wound in the arm; that having secured them, not a word did they utter, neither could they be induced to taste food.

A council of war was at once held. I tried to enforce my orders to take the prisoners to head-quarters; against this the men were all opposed. They said provisions were short, snow might come on at any moment, and in that case the prisoners would very likely escape; that taking them with us would only add to the risk of delay, and weary the men who had to keep guard over them day and night. Summary judgment was demanded, and finding that positive disobedience would follow my determination to abide by orders, I deemed it more expedient to yield to the wishes of the men

than endeavour to enforce what I felt sure I could not possibly carry out.

A branch suited to their purpose was soon found, and from it three tether-ropes dangled, each with a noose at the end; the horses, carrying their terror-stricken masters, the three Snake Indians, were now led underneath the moss-covered branches, which drooping to the ground formed a kind of curtain round the tree. It was a strange place of execution. Above the sturdy branches resembled natural arches; underfoot grew moss, and grass soft as a velvet carpet; a dim half-light found its way in varied quantities through the leafage, giving the scene a solemnity and grandeur almost unearthly in its character. Each savage had a noose adjusted to his neck; their legs were unbound from beneath the horses' bellies; '*ready*' peeled the deep voice of the Sergeant, then a smart cut administered to each of the horses caused them to spring from beneath their riders, who were left swinging from the branch. The heavy jerk must have produced immediate death, for a slight convulsive shudder alone shook the frame of each savage as the soul quitted its tenement, to wing its way to that bourne from whence no traveller returns.

I need not weary you by recounting the return to head-quarters; we had a cold and perilous trip, snow fell heavily and rendered it a difficult matter to follow the trails, but old 'Auger-eye,' true to his instincts,

guided us safely on our way, until we trotted into the square of the cosy 'Post,' welcomed by the hearty congratulations of all, there to relate over and over again this strange story.

So ended this romantic narrative, which I relate, as nearly as memory will permit it, in the words of my kind-hearted host.

I heard some time afterwards of the rescued women—one of them had married a soldier who was present at the discovery in the 'wickey' house, and that the little girl was adopted by a settler and his wife, who were as fond of her as though she had been their own child. The other woman was still a servant to Captain D——, who told me the tale.

But to return. Let us suppose ourselves to have procured our 'bell mare,' riding and pack mules. The next thing is branding, and obtaining the equipment, or, as it is termed, in packer phraseology, 'the rigging.'

Branding is a small matter of detail a novice would hardly think of very much importance, nevertheless its neglect may, and frequently does, prove the cause of very serious annoyance, and not uncommonly results in the loss of the mules or horses with which he is travelling. To explain clearly what I mean, let us suppose you have paid for your pack-train, and to have taken a receipt only for the money; the mules are branded M.C., which means, for example, Mike Castle, a well-known packer, from whom you have purchased

them. You start, and on reaching some outpost town, up walks the U.S. district constable, who, as a rule, like the Cornish Mayor of Tintagel, combines within his sacred person the varied offices of judge, mayor, magistrate, constable, registrar-general of marriages and births, and chin-shaver in general. I should have written *city*, as there are no towns in the wilds of America—a log-shanty, hog-stye, and hen-house are enough in themselves to warrant the civic title. The functionary of many offices says to you, ‘Stranger, war did you git them mules?’ ‘Why, I bought and paid for them,’ you indignantly reply, and if your temper will allow you so far to condescend, out comes the receipt, which you imagine will prove a stopper to the impudent questioner. Not a bit of it; he deliberately reads it through, and with a leer in his eye, says, as he squirts out a small cataract of tobacco-juice, ‘Whar’s your brand; thar ain’t none on the mule, nor narry counter-brand on this har receipt; you might a jist stole ’em from Mike’s band, or may-be the mules have strayed, and you might a found ’em; I shall empound ’em, stranger, until you get Mike’s counter-brand receipt.’ So your mules are stopped until you can find means to communicate with the seller, and in that way prove your right of ownership.

Now, what you ought to have done is this: when the purchase was completed you should have bought a brand, or have had one made by the blacksmith.

Initials are as good as anything; our Commission brand was B.C. and the broad arrow. The letters should have been burnt into the skin under the brand mark of the seller, and on his receipt it should have been written: branded M.C., brand of seller; counter-branded, B.S. (Bill Stubbs), brand of buyer. The thigh on the near side of the animal is the best place for the brand mark, because it will be the more readily seen; well nigh every operation, such as girthing, roping, mounting, or what not, is usually done on the near side. The branding-iron should be made red-hot, and then applied lightly, and kept against the skin after the hair is burnt off sufficiently long to scald it and destroy the roots of the hair, but not long enough to cause a sore, which is sure to slough, and in that case might be troublesome to manage. Branding on the hoofs is of no use; the mark rapidly grows out, and then your own and the counter-brand are lost together; on the back, so as to be under the saddle, is likewise a bad place, although many brand there to avoid disfigurement; the skin where the mark has been made is of a spurious character, and readily rubs into a sore in hot weather, despite every care—hence, I always refuse to purchase pack animals which have been branded on the back. Numbers of the mules I purchased in California had been so tattooed with different brand marks, that their thighs resembled trees I have seen, in the bark of which loungers invariably cut

their own, and I suppose their sweethearts' initials, until the letters become so jumbled together as to defy even the skill of the carvers to identify their own letters from those of their neighbours.

This system of branding and counter-branding is extremely useful, and I may say actually necessary, in countries wherein stealing mules and horses amounts to a profession. Animals in outpost places are not even safe from theft when shut up in a livery stable, if unbranded; but if the animals are plainly marked, the thieves know very well that they may be, as you were, in the supposed strait, caught by the watchful functionaries who are ever on the look-out for chances to pocket dollars in the shape of fees; one or two of these preventive officers are generally stationed wherever mining is going on, or where there are facilities for the disposal of riding and pack animals. There is no crime deserving a heavier punishment than is that of horse or mule stealing in a wild country. A traveller's or a hunter's life is in a great degree dependent on his means of transport. Deprive him of his horse, without his having any chance to replace the loss, and in most cases it would be more merciful to kill him at once than leave him to perish slowly, bit by bit, and day by day, from hunger, weariness, solitude, or the arrow of the savage, which in nine cases out of ten must be his fate if left entirely to his own resources, far away from help or civilisation. Hence, a horse thief is often swung up

to the branch of a tree by the enraged packers without even allowing him the benefit of trial by jury, or the prospect of escaping by any legal quibbling; they proclaim the all-powerful law of Judge Lynch, and as they express it, 'just run him up with a "lassoo,"' to stop his further thieving, and as a warning to all other darned cusses who 'rush off' stock.

In the choice of pack-saddles, opinions vary most materially. Some persons, for example the Hudson's Bay Company's traders, stick to, and swear by, the cross-tree pack-saddle, from which they hang their bales of fur-peltries by loops.



CROSS-TREE PACK-SADDLE.

CHAPTER III.

Fur-Traders' System of Packing—Journey from Fort Colville to Fort Hope—Disadvantages of the Cross-tree Pack-saddle—Crimean Pack Saddles radically bad—Desirability of the 'Aparejo'—How to make an Aparejo—Its Weight—Evidences of Suffering—In search of Pack Saddles—The 'Rigging.'

It may prove interesting *en passant*, to give a brief outline of the plan adopted by all the far inland fur-trading posts, for the conveyance of the year's furs to the place, at which either a steamer or a 'batteau' unloads the annual supply of goods sent from England for the use of the traders, and in return takes the peltries traded, back to the central depôt. As a description of one will apply with equal force to all of them, I shall select for description Fort Colville, which is situate on the banks of the Upper Columbia, about 1,000 miles from the seaboard. This quaint old place, one of the Company's earliest trading stations west of the Rocky Mountains, is worthy of a passing description as affording a good example of the fur-trader's 'Home in the Wilderness.' The trader's house is quadrangular in shape, and built of heavy trees squared and piled one upon another. The front, faces the Columbia River, whilst

rearward is a gravelly plain which I shall presently have more to say about. The visitor, on entering the somewhat ponderous portals of this primitive mansion, finds himself in a large room dimly lighted by two small windows, the furniture of which, designed more for use than ornament, consists of a few rough chairs and a large deal table, the latter occupying the centre of the room. Looking beneath this table one cannot fail to notice an immense padlock, which evidently fastens a trap-door, and if you happen to be a guest of the chief trader, (and here I must add as the result of long experience that the Hudson's Bay Company's traders are the most hospitable kind-hearted fellows I ever met with), the probabilities are greatly in favour of your discovering the secret of the trap-door, very soon after you enter the room. The table pushed back, the trap-door is unfastened, and the trader descends into a dark mysterious-looking cave, soon however to emerge with a jug of rum, or something equally toothsome. Now, if you are of an inquisitive turn of mind, you may find out that in this underground strong-room, all valuables are deposited and secured. This room, beneath which the cavern has been excavated, has some person to occupy it night and day, and the chief trader sleeps in it; hence it is next to impossible that the savages could steal anything unless they forcibly sacked and pillaged the establishment. An immense hearth-fire, both warms and lights this dreary sitting-room, for at least eight months of the year. Behind the dwelling is a

large court enclosed by tall pickets, composed of trees sunk in the ground side by side, (the house itself was I believe once picketed in, but the Indians proved so friendly that any protection of that description was deemed unnecessary). In this court, all the furs traded at the fort, are baled for conveyance by the Brigade to Fort Hope. The trading shop, and store of goods employed in bartering with the savages, adjoins the trader's house, although not actually a part of it; and the fur-trader stands therein behind a high counter, to make his bargains. The Indians have a curious custom in their barterings, which is, to demand payment for each skin separately, and if a savage had fifty marten skins to dispose of, he would only sell or barter one at a time, and insist on being paid for them one by one. Hence it often occupies the trader many days to purchase a large bale of peltries from an Indian trapper.

The system of trading at all the posts of the Company is one entirely of barter. In early days, when I first wandered over the fur countries east of the Rocky Mountains, money was unknown; but this medium of exchange has since then gradually become familiar to most of the Indians.

The standard of value throughout the territories of the Company is the skin of the beaver, by which the price of all other fur is regulated. Any service rendered, or labour executed by Indians, is paid for in skins; the beaver skin being the unit of computation. To explain

this system, let us assume that four beavers, are equivalent in value to a silver-fox skin, two martens to a beaver, twenty musk rats to a marten, and so on. For example sake, let us suppose an Indian wishes to purchase a blanket or a gun from the Hudson's Bay Company; he would have to give, say, three silver-foxes, or twenty beaver skins, or two hundred musk rats, or other furs, in accordance with their proper relative positions of worth in the tariff. The Company generally issues to the Indians, such goods as they need up to a certain amount, when the summer supplies arrive at the Posts—these advances to be paid for at the conclusion of the hunting season. In hiring Indians east of the Cascade Mountains, whilst occupied in marking the Boundary line, our agreement was always to pay them in beaver skins, say, two or three per day, in accordance with the duty required; but this agreement did not mean actual payment in real skins—a matter that to us would have been impossible—but that we were to give the Indian, an order on the nearest trading post of the Hudson's Bay Company, to supply him with any goods he might select, up to the value of the beaver skins specified on the order.

In many of the *Posts* the trade room is cleverly contrived, so as to prevent a sudden rush of Indians, the approach from outside the pickets being through a long narrow passage, only of sufficient width to admit one Indian at a time, the passage being bent at an acute

angle near the window, where the trader stands. This precaution is rendered necessary, inasmuch as were the passage straight, the savages might easily shoot him. Where the savages are hostile, at the four angles of the court bastions are placed, octagonal in shape, and pierced with embrasures, to lead the Indians to believe in the existence of cannon, intended to strike terror into all red-skinned rebels daring to dispute the supremacy of the Company. Over the fur shop are large lofts for storing and drying the furs in as they are collected. Beyond this a smith's shop, a few small log shanties, and an immense 'corral,' for keeping the horses in, whilst fitting out the 'brigade,' make up all that is noteworthy as far as the buildings are concerned at Fort Colville. The regular staff stationed at this Post, consists of the chief-trader, a clerk, and about four half breeds, the remainder of the hands needed are selected from the Indians. The houses are by no means uncomfortable, and I can truthfully say, many of the happiest evenings of my life, have been passed in the 'big room' at Fort Colville.

Transport yourself, reader, to the banks of the Columbia, a thousand miles from the seacoast; never mind by what means you arrive, only try to suppose we are together, our head-quarters for the time being the Hudson's Bay Company's trading post, Fort Colville, I have just described. If we ramble along the winding trail, leading over the sandy waste, on which this so-called fort stands, on our right hand (we must pass close to them) are several

Indian lodges. These conical affairs are made of rush-mats, and scraps of hide, supported on a framework of sticks, with a hole at the top to let the smoke out.* Dingy little urchins by the dozen may be seen outside, rolling and frolicking amidst a pack of prick-eared curs, ever ready to bite a stranger's legs, their playmates, or each other for that matter, on the slightest provocation. Flabby squaws crouch at the entrancehole—door is a misnomer—whilst a peep through the gaping seams reveals several half-naked savages, idling drowsily round a few smouldering embers, placed in the centre of this most squalid habitation. On our left, and behind us, the treeless plain—once clearly the bottom of a large lake, for the water-line is still visible round the edges of the encircling hills, and the gravelly surface is bestrewn with boulders and water-worn pebbles—stretches away for a good two miles, to meet the wooded slopes of a ridge of hills that ascend in terraces composed of ancient gravels, until growing obscure in the mist and haze of distance they seem to mingle their summits with the clouds. A-head a narrow stream twists like a silver cord from the base of the hills, to join the Columbia. This stream we cross on a fallen tree, a bridge of Nature's own contriving, worn bare by the feet of the Red Skins that traverse it by the hundred during the salmon harvest. Now we scramble up a steep shingly rise and stand on a level plateau, where gigantic pitch-

* *Vide* illustration, page 109.

pine trees, many of them 250 feet high, and straight as flagstaffs, grow thickly. I scarcely know a more beautiful pine than this, the *Pinus ponderosa*, which to a great extent replaces the Douglas pine (*Abies Douglassii*), everywhere east of the Cascade Mountains. The bark, arranged in massive scales, not unlike that peculiar to the cork tree, has between each of the shields or scales deep clefts and fissures, like miniature valleys between mountains of bark, hollows affording most admirable lurking places and sheltered retreats for all sorts of insects. Far below us we gaze down on a landscape, matchless in its massive and sublime beauty; a scene wherein forests, rocks, and a surging cataract, 400 feet in width, fairly stagger one by their very immensity. The ' Kettle Falls ' are not so remarkable for altitude as for the enormous volume of water that sweeps over the jagged masses of basaltic rocks, through which the river at this spot breaks its way. Here too the lake water which once filled the hollow we have just crossed evidently made its escape, whether let out by subsidence of the rocky barrier or upheaval of the land below and around it, is not very easy to determine. About a mile above the Kettle Falls the Na-hoi-la-pit-ka River joins its waters with those of the Columbia, and when thus reinforced the river rushes on with increased velocity to reach the Falls. Its width at this distance from the sea is 400 yards, and in summer, when flooded by the melting snows, it rises quite 40 feet above its autumn

and winter level. Before the river takes its final plunge over the rocks it is split, so to speak, by an island, rocky and devoid of vegetation, if we except a few gnarled and twisted pine trees that struggle for an existence amidst the clefts in the rocks. This island adds very materially to the charm of the scene. Standing in mid channel, it gives one the idea that it is floating, just as though a small mountain had fallen into the river, and was being rapidly carried over the Falls; and the more steadfastly one gazes at it, the firmer grows the belief in its possessing motion. Thus staring at the island and the eddying rapids that whirl past it, I have often grown dizzy, and for a moment imagined that the rocks I sat on, and the entire river bank with them, were fast moving towards the Falls. Below this insular clump of rocks the waters again join and dash over the Falls; so great is the force of the stream that the water looks like moving snow, and from its seething, bubbling, and boiling appearance, the fur-traders have named it the 'Kettle Falls.' This spot is the grand depôt for fishing, during the salmon 'run,' which takes place in June and July. More than five hundred Indians then assemble here, in order to trap this lordly fish, to them an absolute necessity. Cut them off from the salmon-harvest and they must inevitably perish during the bitter winter, starved alike by cold and hunger. I have myself seen above 500 salmon landed in one day from the baskets into which the fish leap. Once every

summer the 'Brigade' (for such is the pack-train styled) starts from Fort Colville to reach Fort Hope, which is a small place even now, but at one time could boast only a solitary house, used for the reception of the furs brought by all the inland brigades for shipment to the main dépôt at Victoria, Vancouver Island. Fort Hope being practically the head of navigation on the Fraser, is visited now, as in the olden days, but once a year by the Company's steamer, freighted with goods of various kinds, for bartering, together with other matters of detail, all of which are carried back by the brigades on their return to their different trading posts.

This journey from Colville to Hope occupies nearly three months for its accomplishment. About the beginning of June preparations commence at Fort Colville for the Brigade. The horses (the Hudson's Bay Company never use mules), in number about 120 to 150, are brought by the 'Indian herders,' who have had charge of them during the winter, to a spot called the 'Horse Guard,' about three miles from the fort, where there is an abundance of succulent grass and a good stream of water. Here the animals are taken care of by the trustworthy Indians until their equipment or 'rigging' is ready, which process is at the same time going on at the fort. Here some thirty or forty savages may be seen squatting round the door of the fur-room; some of them are stitching pads and cushions into the wooden frames of the pack-saddles; others are mend-

ing the broken frames ; a third group is cutting long thongs of raw hide to serve as girths, or to act in lieu of ropes for lashing and tying ; and a fourth is making the peltries up into bales, by the aid of a powerful lever press. Each bale is to weigh about sixty pounds, and the contents to be secured from wet by a wrapper of raw hide, the skin side outermost. This package is then provided with two very strong loops, made from raw hides, for the purpose of suspending it from what are called the 'horns' of the pack-saddle. Two of these bales hung up each side of a horse is a load, and a horse so provided is said to be packed. When all the preparations are completed the horses are driven in from the 'guard' to the fort, and the packing commences. They use no halters, but simply throw a lasso round the animal's neck, with which it is held whilst being packed ; this finished, the lasso is removed, and the horse is again turned loose into the 'corral,' or on to the open plain, as it may be. Let us imagine a horse lassoed up awaiting the operation of packing.

First a sheep or goat's skin, or a piece of buffalo 'robe,' failing either of the former, called an 'apichimo,' is placed on its back, with the fur or hair next to that of the horse, and is intended to prevent gall-ing ; next the pack-saddle is put on. This miserable affair with its two little pillows or pads, tied into the cross-trees of woodwork, is girthed with a narrow strap of hide, which often, from the swaying of the load,

cuts a regular gash into the poor animal's belly. Next a bale is hung on either side, and the two are loosely fastened together underneath the horse by a strap of raw hide. This completes the operation of packing, and the horse is set free, to await the general start. When all the animals are packed, each of the hands who are to accompany this cavalcade mounts his steed; then waving their lassos round their heads, and vociferating like demons, they collect the band of packed animals, and drive the lot before them as shepherds do a flock of sheep. The principal trader, as a general rule, takes command of the brigade, the journey being anticipated by both the master and his men as a kind of yearly recurring jubilee. To the Red Skins it is an especial treat, for during their stay at Fort Hope they meet with three or four more brigades, and like sailors on liberty days, get as drunk as they please, a privilege the Indians never fail to make the most of.

I have been rather tedious, perhaps, in thus minutely describing the system of packing in use by the Hudson's Bay Company, but I plead as an excuse that it will help my reader to the clearer comprehension of the systems adopted by 'professional packers,' who pack for money and a living. My own opinion, deduced from practical experience, is that the Hudson's Bay Company's system of packing is about the very worst means of conveying freight on the backs of animals which by any possibility could be adopted. The horses,

as I saw them at Fort Hope, and as I have repeatedly observed them at Colville on the return of the Brigade, were nearly every one of them galled badly on their backs, cut under the bellies in consequence of the sawing motion of the girth, as well as being terribly chafed with the cruppers. I tried this form of pack-saddle* on our first arrival at Vancouver Island, and as the saddles were specially made for the Commission work, the very best materials obtainable were used in their construction, the cross-trees were riveted, the pads stuffed with hair, and under each saddle, besides the cushion, I had three or four pieces of blanket placed, so as to avoid every chance of galling the backs of the mules. But all to no purpose; the loads will rock and work loose in spite of all the skill you can bring to bear, and if the pillows or pads once are saturated with wet they get as hard as stones, and in that state gall to a certainty.

More than this, with boxes, bales, tents, cooking gear, instruments, axes, cross-cut and pit-saws, to carry up hill and down dale, as we had to do every day during the cutting of the Boundary line, one might as reasonably have hoped to bind up loose potatoes into a transportable bundle with a straw band as to transport our heterogeneous freight on mules' backs, with cross-tree pack-saddles. I had a good deal of experience in the Crimea, during the war, in regard to diffe-

* *Vide* illustration, 'Cross-tree pack-saddle,' page 52.

rent patterns of pack-saddles. One in particular, which was sent out from England by Government, and was said to be *par excellence* the very best thing of its kind ever invented. It is impossible to describe it, or to convey very clearly a correct idea of its construction. The frame was of wood arched at the pommel and cantle, bound with iron, and having affixed to it numbers of rings, and complicated hooks-and-eyes of the same material (the uses of which I never found any one able to explain), and it was padded, somewhat after the fashion of an ordinary riding-saddle, only on a rougher scale. What I can say of it is, that if it were desirable to make anything in the form of a pack-saddle which, in every detail of its construction, should be worse than the cross-tree saddle, this invention, sent us whilst at the Crimea, came very near to, if it did not quite accomplish, the desired end.

I assert, and without fear of contradiction (from any who are practically able to offer an opinion), that no pack-saddle having in its construction any element of woodwork is worth a straw.

However strong the wooden framework of a pack-saddle may be, so that undue weight and clumsiness are avoided, I say it will sooner or later get broken, if used for conveyance of heavy freight, made up of packages which are of all shapes and sizes; such, for instance, as 'dry goods,' meaning trans-atlantically, drapery, hosiery, and clothing in general, or, what is

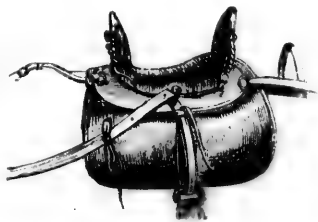
called by packers, 'Jews' freight.' To a certain extent the cross-tree saddle serves the purposes of the Hudson's Bay Company better perhaps than would the form of pack-saddle I am presently going to advocate; and here I wish it to be clearly understood that in stating that the Hudson's Bay Company's system of 'packing' is not a good one for the transportation of heterogeneous freight, I do not mean in the slightest degree to reflect on the management of that honourable Company, but I said so only as comparing the cross-tree pack-saddle with the aparejo. The Company's system of packing, when considered in reference to the work to be done, is doubtless the very best that could be adopted under the peculiar circumstances in which they are placed. Their freight being always made up into packages of a definite shape and weight, it needs no skill, or even practice, to hang them on the saddles, any more than it would to hang a coat upon a peg. Hence, the Company have no need of professional packers; more than this, the pack-saddles are only used once a year, and all their transport is performed on horses instead of mules.

But if once the saddle-tree breaks, the cross-tree pack-saddle is actually useless, and should an animal fall or roll with its load, a mishap of daily occurrence, then a broken saddle-tree is the usual result. Lash it with cord and splints, nail, or otherwise tinker up the breakage, in any manner your ingenuity may suggest, it will prove of no practical use; the fracture is certain to

work loose, the load to shift, and if you escape without so galling the pack animal as to render it useless for a month, or more, you may congratulate yourself on possessing extreme good fortune.

In the transport service of the United States, Grimsley's pack-saddle is very frequently employed, more especially for outpost and exploration purposes.

This pack-saddle is simply a modification of the old fashioned 'ridge-tree pack-saddle,' which is even now used by millers in the west of England for the conveyance of flour and grain on horse or donkey back, to and from their mills. Captain Marcey speaks



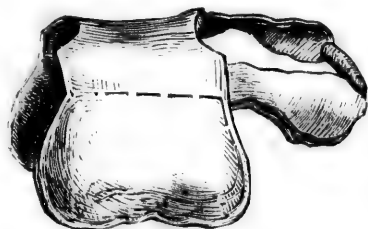
GRIMSLEY'S PACK-SADDLE.

very highly of the good qualities possessed by this pack-saddle, in his admirable little book on travel. I never saw a pack-train equipped with the Grimsley's pack-saddle, hence I am unable to say anything in its praise: and to disparage without having first tested its qualities, good or bad, would be most unfair; nevertheless, the same objection (theoretically) exists in the Grimsley pack-saddle I so complain of in the cross-tree saddle, viz. the using a saddle-tree or frame made from wood, thereby increasing the risk of breakage. I have already pointed out the difficulties one has to contend with when a pack-saddle-tree is smashed. I have given an illustration of this United States pack-saddle, because I

am disposed to think it may be found serviceable, if used for mule trains accompanying troops on the march, with whom there are mechanics, and materials for the repair of damage, ready at the shortest notice.

If one is travelling alone, with only a single horse besides the horse ridden, and on which only a few light articles are to be packed, then perhaps a cross-tree or Grimsley's saddle may be found to answer pretty well; but if the 'wanderer' has learned to 'pack' in the proper sense of the word, even then I should advise him to do what I most assuredly should myself—use the *aparejo*.

My own conviction, deduced from long and extensive



ROUND-TOPPED APAREJO.

experience, is, that the *aparejo* comes nearer to what I conceive to be perfection in a pack-saddle, than any other form of pack-saddle yet invented, or perhaps I should have said, that

I have yet seen. As neither wood nor iron enters into its composition, wherever there are animals from which hides can be obtained, there a person can find all the materials he needs for making an *aparejo*, tools required for sewing of course excepted. But before saying more in praise of its many admirable qualities, it may be as well to explain how this model

pack-saddle is constructed. Any one who has ever been in Mexico, Spain, or North-west America, will have been pretty sure to have seen a mule-train, loaded with goods, packed on aparejos; but unless the traveller has tried his hand at the work of 'packing,' and taken his place, first on the near side of the animal, and next on the off, I'll venture to say he could no more throw a 'riata' and rope on a load, than he would be able to walk on a tight-rope by simply looking at Blondin. This pack-saddle is clearly a Spanish invention, and thus found its way through Mexico into California and the north-western parts of America.

An aparejo may be defined to be two bags made either of dressed, or undressed hides, stuffed with dry grass, and fastened together at the top; take two bed-pillows, sew them to each other at the one end, hang them across a dog's-back, or a chair will serve every purpose, and you have a rough representation of an aparejo without any 'rigging.' The size of each cushion or bag varies somewhat in accordance with the taste or caprice of the packer by whom the aparejo is cut. In like manner there are also different fashions in regard to shape; for myself, I should have each cushion 3 feet 6 inches in length, and 2 feet 6 inches in width; the two ends to be joined together with a sharp edge, and not by means of an intermediate piece of leather. When joined according to my plan, the aparejo, if viewed endways, has the exact shape of the gable end

of a house; when the bags are united by an intermediate piece of leather, the aparejo becomes rounded in form, or arched.* In other words, my reason for



THE GABLE-ENDED APAREJO.

giving the gable-ended aparejo the preference, is this—when placed on the mule's back, however weighty the load may be, it cannot be pressed down upon it, hence there is always a space intervening betwixt the ridge

of the animal's back and the angle of the aparejo, sufficient to allow a current of air to pass freely through, which will be found to exercise a material influence in the prevention of blistered backs: blistering from exclusion of air, and continuous pressure, being the primary cause of nine sore-backs out of every ten. In the other case, wherein a piece of leather is used to connect the ends, I contend that the principle is bad, because this flat band must necessarily come down on the back of the mule, and the heavier the load the more tightly will this strap be brought to bear on the ridge of the spine, and, as a matter of course, the liability to produce sores be much more imminent.

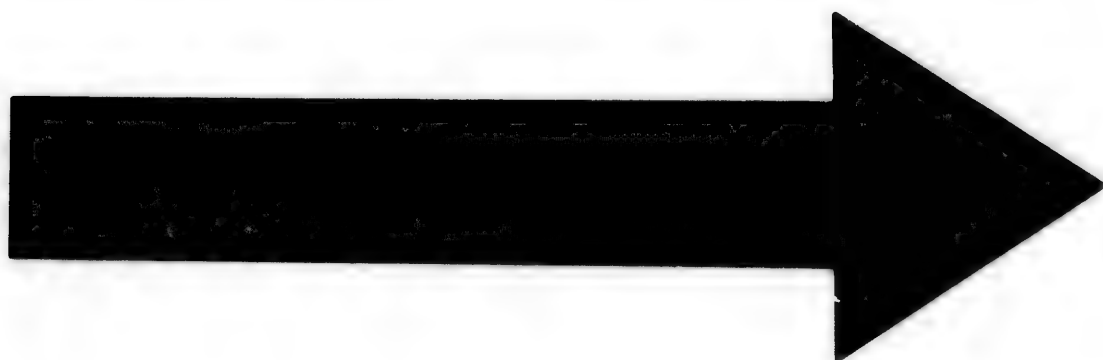
The weight of an aparejo of the size I have given the preference to is somewhere about 30 lbs.; if wetted it will weigh quite 50 lbs. It is stuffed with dry grass,

* *Vide* 'Round-topped aparejo,' page 68.

some small twigs being first placed in the angles, to keep them stiff, and obviate any chance of bending, or of their being indented from the pressure of the 'riata.'

The stuffing is accomplished through a round hole, purposely cut from out the centre of the inner side of the cushion, just where it rests on the arch of the animal's ribs, and let me warn every 'wanderer' who sets up or travels with a pack-train to exercise the strictest vigilance with respect to the stuffing of his aparejos. Never trust the packers to attend to it, unless immediately under your own surveillance. A day's neglect may gall a mule badly, whereas five minutes' time devoted to the investigation of the stuffing prior to 'saddling up' would have prevented so mischievous a result. Hired packers always skulk these anything but trifling details, if they are not strictly looked after. The steam and damp from the perspiring mules condenses and collects amidst the grass composing the stuffing, which, when in this condition, has a strange tendency to felt itself into various-sized nobs. These, from the continued motion imparted to the aparejo by the regular pace of the mule, become as hard as cricket-balls, and, as I said before, if not removed or picked to pieces, soon make their presence known by boring, or rubbing an ugly hole through the poor animal's skin.

When once thoroughly up to 'working' a 'pack-



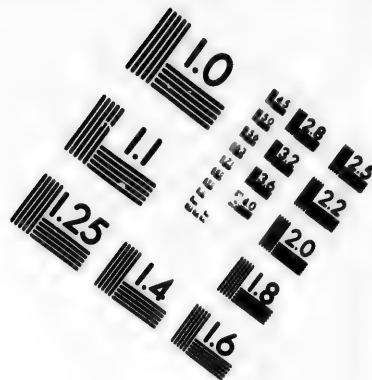
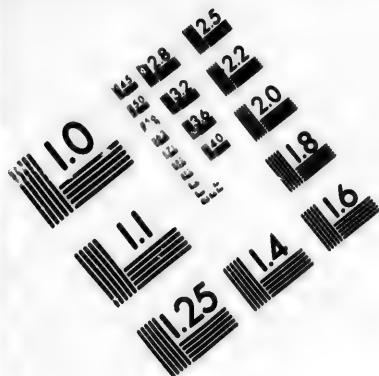
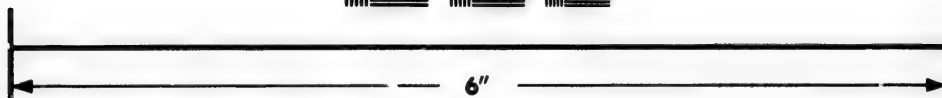
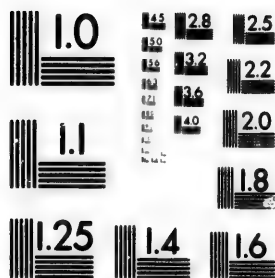


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train,' you will notice in a moment, if you have a sharp eye—as the mules one by one file past you after the 'bell'—if one of them is 'galling.' When suffering pain, a mule's lips have invariably a tremulous twitchy motion, the ears are slanted backwards, and the teeth every now and then grind sharply together, producing a singular grating noise, which once heard will never be forgotten. The silent evidences of suffering are quite as intelligible as articulate words, when one only finds out how to interpret them; a mule telling you that there is something wrong ought to be stopped at once, its load removed, the aparejo 'unsynched' and examined, and the cause of the evil remedied. An inexperienced or 'green' hand would, in all likelihood, neglect thus regularly to watch his train, a want of care he might have occasion to lament when unpacking at camping time.

When purchasing 'aparejos,' if you ask the price of an aparejo only, the seller will tell you perhaps 15*l.*, or it may be fifty dollars each, as the price he wants. Supposing the terms are agreed on, you will find that nearly as much again as you have bargained to pay will be added on for 'rigging,' which should always be specified in the purchase of aparejos; if forgotten, it is usually made a handle for subsequent unfair extortion.

When equipping the eighty mules I purchased in California for Her Majesty's Commission, I had immense

difficulty to discover any aparejos which were for sale, as packing happened just at that time to be unusually brisk. I remember at Stockton, when casting about amongst the more probable localities, wherein I might by good fortune possibly alight upon the kind of packing-gear I was in search of, a Yankee merchant, who dealt in everything from toothpicks upwards, came rushing after me, having scented my business as readily as a raven or a vulture would have done a dead carcase. He began at once in nasal drawl—‘Say, cap, you are just a foolin’ your time; bet your pants, thar ain’t narry aparejo down har, fit to pack squash on.’ ‘Well,’ I replied, ‘how can I tell that unless I inquire?’ ‘Waal, I raither guess you want to buy, and I want to sell, so just let us two take an eye-opener, cap, and then make tracks straight a-head for my store, war I can show you sich a lot of aparejos as you ain’t ever seen afore in these parts; I ain’t showed em to none of the boys as yet, guess if I did they’d have the store down slick; give me fifty dollars a-piece for the aparejos, rigging and all, and walk right along with ’em to the bluffs.’

Considering this rather good news, I did ‘liquor up’ with my new friend, and afterwards adjourned to the store, most anxious to secure what I imagined was a valuable prize. Picture my intense disgust when, on being conducted into a cellar, I saw a huge pile of pack-saddles, such as had been sent to the Crimea and

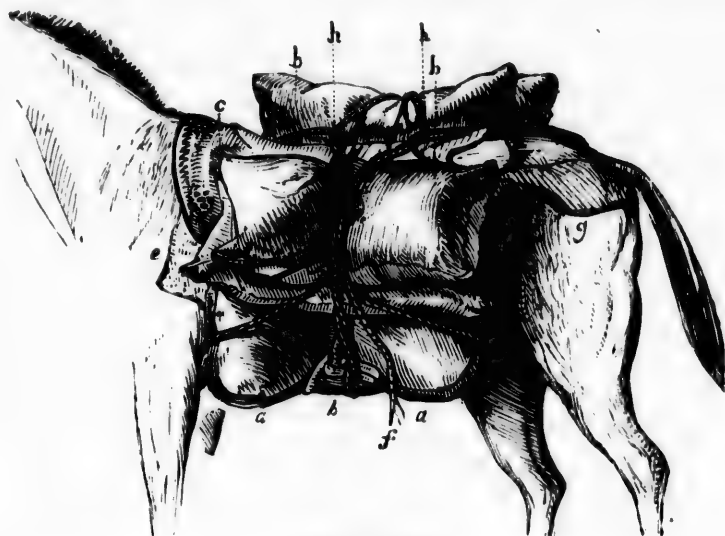
returned, and which this speculative individual had picked up cheaply as a consignment from England.

I have already shown how utterly useless these trashy and badly made saddles were in the Crimea, an opinion fully confirmed by this somewhat singular discovery that in the very centre of the busiest 'packing' country, perhaps I may safely say in the world, not an individual packer could be found who would take them even as a gift. The 'cute' dealer, imagining he had for once in his life stumbled on a 'sucker,' tried to palm them off on me as aparejos 'that couldn't be matched.' It 'took him down,' though, when I winked wickedly, and, inventing a slight fiction for the occasion, said, 'Why, these are the pack-saddles we sold off when the Crimean war ended; I know the lot right well; they are not worth that.' I snapped my fingers, turned on my heel, and left my friend astonished, and two drinks (50 cents.) out of pocket. So much for Crimean pack-saddles. Two years afterwards I heard that the unfortunate dealer still possessed them.

The rigging consists of sundry articles, each of which will require a brief description as we pass them in review one by one.

The 'riata' binding, or lashing cord, should be from fifty to sixty yards in length, in one piece, the size of which should be inch rope, or a trifle less will do. The more angular and clumsy the freight is which has to be packed the longer will the riata be required. The ends

should be neatly secured with fine twine, and there ought not to be any join or other inequality of surface; if there is, the rope will not 'run' freely, and at the same



PACKED MULE.

The load is supposed to represent four 50-lb. sacks of flour.

a, a, lower edge of aparejo.

b, b, showing where the aparejo rests on the mule's back.

h, h, showing where the 'riata' is tightened upon the load.

g, the crupper.

e, corner of sweat cloth.

c, the corona.

b 2, synch.

f, loose end of the riata.

It is usual to pile smaller packages that are not very heavy betwixt the sacks, upon the centre of the aparejo. This has been purposely omitted in the cut, in order to show how the riata acts in securing the load.

It will aid the reader to a clearer understanding of the adjustments of the riata and sling-rope, if he will refer to this illustration when we are packing our imaginary mule, Chap. XI. p. 158.

time do a good deal of injury to the packer's hands; this will be the more readily comprehended when we come to the system of securing the load. The *sling-*

rope is a much smaller and shorter cord than is the riata; its length for ordinary freight should be from twenty-five to thirty feet, and quarter-inch rope is usually sufficiently strong. This rope is used to sling or suspend the load. With these two ropes the load is so firmly secured as to defy any ordinary casualty to displace or otherwise disturb it, and that without loop, hook, buckle, or fastening of any kind of, or belonging to the aparejo.

The aparejo is secured to the mule by the *synch*, b 2, which consists of a piece of stout canvas doubled and sewn strongly together, from seven to twelve feet long, and twelve inches wide. At one end of this girth a leather strap is attached, whilst at the other



SYNCH, SHOWING THE
WOODEN EYE.

either an iron ring or, what is far better, a small piece of hard wood naturally grown into a bow shape, the two ends being sewn into the canvas; an eye or concave space is by this plan left in the centre for the leather strap, which should be kept well greased to make it run through easily. In 'synching up,'

two or three turns of the strap must

be taken round the eye, in order to avoid the risk of its slipping back, when the strain is taken off in order to fasten it, which is done by passing the free end through a loop purposely sewn to that part of the synch which

comes underneath the load, and then passing the end beneath the strap itself. If it were to be tied, nothing short of cutting the strap would ever loose it. Synches are sometimes made from Mexican grass; they are always expensive, and in no respect superior to canvas.

Placed on the mule's back, and answering the purpose of the ordinary lining, fixed to English riding and pack-saddles, are the *blankets* (e), *corona* (c), and *sweat-cloth* (e).^{*} The 'blankets' are four or five pieces of thick woollen material. Blanket is better than anything else, although soft carpet answers the purpose; the size of each piece should be about three feet square, although this is not very material; if more or less, it will not matter much. The sweat-cloth goes next the skin, and ought to consist of good canvas, and should not be less than four feet square. The 'corona' (c)† goes over all the cloths, and under the aparejo. This is quite a fancy affair, which is usually braided and embroidered, and made of scarlet or some other bright-coloured cloth. Often the initials or the brand mark of the owner are emblazoned on the corners, like heraldic devices. This, however, answers a purpose, and is not done merely for show. By the 'corona' the packers know to which mule each aparejo belongs, so that the right mule always wears the right saddle.

An ordinary halter, of the same shape and make as

^{*} *Vide* letters in cut 'Packed Mule.'

† *Vide* cut.

we use for horses in England, must be provided for each mule ; the halters are only worn whilst the mules are travelling, and are then indispensable, inasmuch as that the packers could never catch a mule with a loose or shifting load if it had not a halter on its head for the men to seize. No one, excepting from actual experience, would believe how crafty old pack animals become ; they know in a moment if the packers want to recover them, and scamper away, often shaking the freight clear of the ropes, and doing incalculable damage. In the second place, halters are equally essential, for the purpose of fastening all the mules together during the time they are waiting to be packed, as you will better understand when we come to ' pack our train.' The last



TAPUJO, OR BLIND.

portion of the rigging is the blind, or ' *tapujo*.' Each packer carries one of these subduers, and no schoolboys ever lived in greater dread of cane or birch than do the mules of the *tapujo*. Made of leather, its length is about fifteen or eighteen inches, its width about six inches in the centre, then tapering gradually away at its ends to sharp points, which are fastened together ; from each of the points dangle sundry small twisted leather thongs, like a ' cat ' of eighteen tails instead of nine. Exactly in the centre of the *tapujo* a loop is sewn, through which the packer passes his fingers, and when

thus armed, woe betide the unlucky mule which is guilty of any transgression. This is one of the tapujo's uses, but it is principally employed to 'blind' the mules whilst anything is done to them. Simply by dropping it behind the animal's ears, and allowing the wider part to fall over the eyes, it at once and most easily prevents the mule from seeing what the packers are up to; and when this dreaded affair is fairly on, you might as well attempt to make a log move as induce a blinded mule to shift its position. So much for the complete rigging of a pack-mule. The next thing we have to look to are saddles and bridles for the 'riding mules.'



MULE WITH BLIND ON.

CHAPTER IV.

Riding Saddles—Stirrups—‘Cabresto’ preferable to an ordinary
bridle—Tethering.

I KNOW how very steadfastly all we Englishmen believe in the ‘English hunting saddle,’ and for all purposes, be it for the road, the hunting-field, the race-course, or what not, I for one hold up my hand for the English riding-saddle in a civilised country. But in a district where there are no saddlers’ shops into which one can pop at a short notice to get a breakage repaired, or a new panel or lining put in, buy a fresh pair of girths, or obtain new buckles in lieu of old ones, I say, from my own experience, in this case have nothing to do with an English riding saddle. I am not saying a word in its disparagement, and will briefly state my reasons for giving the preference to the Californian, or that which in reality it is, the Spanish saddle adapted to a particular purpose. In the first place, it will be just as well that I should briefly describe the kind of riding-saddle I invariably use for ordinary travelling, and breaking ‘mustangs;’ but let it be clearly understood that my remarks do not apply to ‘running buffalo,’ for which I use the Indian pad—but of this anon.

The framework of a Californian riding saddle consists of a 'saddle-tree,' made much in the same way, as far as materials are concerned, as is that of our English saddles, but widely differing from it in shape. The pommel and cantle are carried very high, especially the former, which terminates in a kind of knob; to this frame four leather straps and two rings (that take the place of girth straps in an ordinary saddle) are fastened, not by sewing with a needle or awl, and thread, but with strips of raw hide which are firmly and securely tied. The stirrup leathers also hang from the frame itself, and not from steel 'spring catches,' as in our saddles, and the leathers, too, are further fastened together with hide thongs. The knob of the pommel and the edge of the cantle are bound with leather, but the other parts of the frame have nothing fastened to them, excepting the 'synch' straps and stirrup leathers. A wide piece of leather, ornamented in accordance with the taste or pocket of the owner, cut nearly square, and having a hole in the front part for the pommel to come through, and a long slit behind for the cantle, is intended to cover the frame when the saddle is 'synched on' to the horse, and is for the rider to sit on. Now, if I have made my description comprehensible, it will be seen that there is no sewing, no buckles, no lining or fixed 'panel,' as saddlers style it, but in lieu of these, four or



CALIFORNIAN
RIDING SADDLE.

five small squares of blanket are employed, or a rug that may be used for sleeping in at night; in a word, anything soft and foldable can be placed under the saddle. The 'synch,' or girth, should be made of horsehair, woven flat in the same manner sailors make 'sennit,' 10 inches wide (one girth only is used) and 2 feet 6 inches to 3 feet in length; at each end a strong iron ring, not less than two inches in diameter, should be woven in with the hair. I have already said that four straps and two rings, similar to the 'synch' rings, are fastened to the saddle frame, and from each of these saddle rings a strong leather strap, about 4 feet in length and $1\frac{1}{2}$ inch in width, dangles. It is fastened to the ring by cutting a slit in one end of the strap; then putting it through the ring the other end of the leather is passed through the slit, and hauled up like a running knot. To the 'off' side strap the synch is made fast by a knot, known as the 'Mexican knot,' and its length is regulated on the off side in accordance with the greater or lesser rotundity of the animal to be ridden. It is very difficult to describe a knot, and in this case, I may say, next to impossible.

Like everything else, it is very simple to anyone accustomed to tie it, and a lesson of five minutes' duration would serve to teach the way to fasten a 'synch,' when a whole page of writing would fail in so doing. The 'Mexican knot' is a most useful fastening, as it enables the rider to loose a 'synch' by simply

giving the end of the strap a sharp tug, thus obviating all the bother of untying a knot which runs up tight. At any rate, I will endeavour to give an outline, as it were, of 'synching up.' The saddle-cloths carefully folded so as to have no crease, and placed on the horse's or mule's back, the saddle is taken by the end of the pommel with the right hand and placed carefully on the saddle-cloths; the left hand keeps firm hold on the horse, either by the bridle or the 'riata' round its neck. If you have a refractory animal to deal with, make it fast to a tree with the 'riata.'

If an animal gets away from you, it is more than likely you will never see it again, and if saddled so much the greater loss, for it is usually more easy to replace a riding animal than it is a saddle. Be careful to see the saddle fits evenly on the 'blankets,' and bear in mind the cautions already given relative to 'sore' backs. Now run the 'riata' through the left hand, so that you may have both hands to work with, and with that hand reach under the animal, and take the 'synch' by the ring, and with the right hand pass the leather strap, which, if you remember, hangs from the 'saddle ring,' through the 'synch ring,' then back again through the ring attached to the saddle, and so on for four or five times. Now haul away with all your strength, and if the turns are properly made through the rings, and the strap well greased, it will run with far greater ease than a buckle, and never slip back if you stop pulling,

which is of incalculable value when dealing with wild mustangs. To fasten, pass the end of the leather strap first underneath the synch ring on the left side, bring it



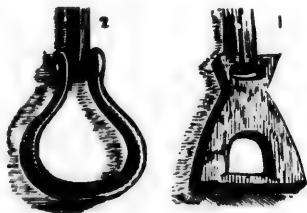
MEXICAN KNOT.

across and pass from above, again under the ring, then double the strap, and thrust the end of the loop under the strap which crosses the fastening, and pull it tight. You have then, if I am understandable, a 'Mexican knot,' which slips in a moment if pulled at, and lies flat against the animal's side, thus preventing any annoyance to the leg of the rider. Lastly, the 'covering leather' is placed over all, and the animal is 'saddled up.'

The stirrups I prefer are made of wood. There are two patterns in general use: one a block of wood, which is scooped out to form a hole only large enough for just the toe to fit in, and a place is also cut through the top for the stirrup-leather. The 'block-stirrups' are made of all sorts of shapes, just as it may suit the taste or caprice of the maker. After the 'blocks are cut' they are boiled in tallow for six or eight hours. This prevents their splitting.

The other sort of stirrup, and the one I prefer, is made of a flat piece of hard wood, bent by steaming into the form of the old-fashioned dragoon stirrup; the bent-up ends are secured to a transverse plug with an iron peg, which runs through its centre, and is then

fastened with a nut or rivet. The stirrup is suspended by this 'cross piece' from the stirrup leather. This kind of stirrup is much lighter than the 'block stirrup,' and enables the rider to put his foot full in, which those who are accustomed to pass long days in the saddle well know is a wonderful rest to the leg, and the size of the stirrup is too great to afford any chance of being hung by the foot, if one is unfortunate enough to 'get a cropper.'



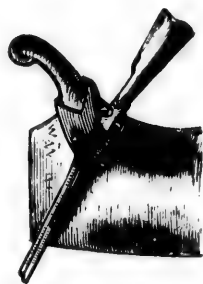
NO. 1. SOLID BLOCK STIRRUP.
NO. 2. STIRRUP MADE OF
BENT WOOD, RIVETED TO
TRANSVERSE PLUG AT THE
TOP.

Great numbers of saddles are made so that the leather covering is fast to the tree, a plan perhaps quite as good as the one I have spoken of for all ordinary work; but for a real rough-and-tumble trip, where 'mustangs' are wild, rivers deep and plentiful, and no chance of a repair except you can do it for yourself; then, I repeat, give me the saddle I have called the 'Californian saddle.' This pattern, in a very rude form, is adopted by all the inland Indians in British Columbia, Oregon, and Washington territory. They construct their saddle-trees by fastening two sticks together which have grown naturally into the desired shape, and then stitching undressed deer-hide over them with elk-tendon, as we use thread. The men more frequently ride on the 'pad,' but the squaws or women use a saddle, and always ride astride

like the men. Most of the American officers belonging to the United States Boundary Commission used the 'Maclellan saddle,' which, after all, although a capital 'dragoon saddle,' is only an elaborated form of the Spanish saddle; but as we are not going to enter upon a consideration of the merits and demerits of various patterns of saddles, I shall not say more about the matter than that which is requisite to explain why the Californian, for all rough work in a wild country, is preferable to any other kind of saddle I have ever used.

In the first place, an English hunting saddle, however strongly it may be made, would stand no more chance with a wild mustang, when, arching its back and stiffening its four legs, it 'buck-jumps' than would a packthread if employed to moor a boat in a tide-way; every girth-strap would be cracked in a moment, and the rider and his saddle sent flying over the mustang's depressed head. No girth or strap that has any element of sewing in it will stand the force a wild horse can exert when it sets itself up to do mischief. In the next place, a fixed lining is most objectionable if it gets wet, as it must do from perspiration, rain, and swimming streams: the stuffing felts, the flannel containing it rots, and use whatever care you may your saddle is thus worse than useless. In the third place, in riding through 'bush,' snags are almost sure to hitch in the saddle-flaps, and a rent not easy to mend is the consequence.

Another advantage, and not a small one either, possessed by the Californian over the English saddle is the ease afforded in carrying a shot gun or rifle. A strap of hide or leather, about two feet long and six inches wide, having two holes cut in it sufficiently large to slip easily over the knob of the pommel, forms the best means I have ever tried for carrying a gun, which should be placed with the muzzle beyond the foot of the rider, on the near side, and passed through the loop strap until prevented from going further by the trigger-guard and hammers; in this position it is ready at a moment's notice, and can be freed by either drawing it from out the loop or by slipping one end of the strap from off the pommel. Then to the frame of the saddle I always tie numbers of long leather thongs. These will be found most convenient assistants for carrying game, or any odds and ends one may pick up or take along with him. From this same knob, on the off-side, I hang a bag, or in trapper's vernacular, a 'possible sack,' in which fishing-gear, pipe, tobacco, matches (if there are any), string, strips of hide, a penknife, nails, a couple of awls, some strong needles, and thread of different kinds, a tailor's thimble and pair of scissors, are stowed away for ready use. The bag may be either leather or canvas. I prefer an ordinary 'game-bag' to



GUN SLING.

any other, divided into several pockets. With a saddle of the kind I recommend, all these little matters—apparent trifles to you, who only know of home travelling—can be easily arranged. If wetted, all you have to do is to spread your blankets before the camp fire and dry them. If the covering leather gets wet it readily dries again, and there is no sewing wherein the stitches can rot and break. A blanket torn can be easily replaced, or a hide can be used in its stead.

We took out with us an English saddle, made especially for the work, for each of the officers of the Commission, but it was only by using extreme care, aided by a servant to clean and attend to them, that these saddles were preserved; and most of us, after all, gave the preference to the Californian saddle. Therefore I sum up by saying that the saddle of the country is better than ours, for travelling, breaking wild horses, hunting (not running buffaloes), and rough work in general. I need not describe a bison, improperly called a buffalo; everybody has seen the picture of one, and the greater number of my readers will, in all likelihood, have made the acquaintance of those which used to be in the Zoological Gardens in the Regent's Park. Full-grown bull bisons will average eight feet and more in length, without the tail, and the weight may be assumed to be from 1,500 to 1,800 pounds per animal as they stand. The cows are considerably less. The principal object in hunting bison is to obtain their hides, which are

dressed and traded as 'buffalo robes.' To run 'buffalo' (I shall retain the term for convenience sake), it is essential that the hunter should be a practised horseman; no skill in shooting is needed, to pull the trigger and load whilst galloping are the only requirements wanted as regards the gun. The hair 'cabresto,'* with the double hitch in lieu of bit, is by far the best kind of bridle; and the only kind of saddle I should ever venture to use is that usually designated by hunters 'the Indian pad,' which, in point of fact, is simply two cushions or small pillows, fastened together by stout pieces of leather, and firmly 'synched' on to the horse according to the plan before described when speaking of the Californian saddle. By using this pad all risk of saddle injury,



INDIAN PAD.

arising from sudden falling, is obviated, for smooth and lawn-like as these vast prairies, over which the panting herds are chased by the hunters, may appear to the eye, nevertheless burrowing animals of several kinds make their subterranean homes beneath the grass; and as one races on, unconscious of such pitfalls, unexpectedly in goes the horse's fore or hind legs, and the chances are greatly in favour of both the steed and its rider getting a roll on the turf. I have

* Vide page 95.

had scores of such tumbles, and have no hesitation in saying that using the 'pad' has saved me from dangerous, perhaps fatal, injuries.

By way of illustration, I shall endeavour to describe a buffalo run according to my own experiences, and relate what befell me on that particular occasion.

As part of the equipment, it is always advisable to allow a long larriette (from the French *l'arrêt*) to trail upon the ground, the one end being fastened with a running noose round the horse's neck. This rope can generally be grasped if the rider is unhorsed and misses his reins; then by holding on to the larriette he can 'choke down his horse,' and prevent its escape. But for the noose and slip-knot, even supposing you had a hold fast of the reins as you lie upon the ground, the horse could tug you along until you would be compelled to let him go, and then if you ever saw either horse or 'gearing' any more, why dame fortune must be kinder to you than she is to most men.

The scene of my adventure is on the broad plains in the Red River settlement. The sun is just creeping from behind the eastern hills, tinting with the rosy hues of morning the splintered summits of many a far-off peak, and at the same time shedding a paler glow over the grassy slopes; the different intensities of the light give to the flat surface of the plains the appearance of being an ocean of mist. A band of Red Indians with whom I am hunting and living are mounted and

ready for the hunt, and few have ever looked upon a more picturesque sight. Their only garment, a piece of skin tied round the waist, makes the muscular figures of the savages look more like exquisite carvings than real flesh and blood. Thus, sitting their prancing half-tamed horses with matchless ease and grace, their black hair flowing in tangled locks down their backs, confined only by a narrow band of ermine-skin, with an eagle's feather sewn to it, they look as wild and fearless as the beasts they are about to chase. We are waiting for the mist to rise, which it will do when the sun comes fairly above the horizon. Ah! there it goes, the fog lifting like a veil. It does not evaporate, so to speak, and disperse, but rises *en masse* like a balloon, and at once becomes invisible; and now we can make out the buffalos scattered over the plain; some are busily cropping their dewy breakfast, others are still lying down in little groups—but all are in happy ignorance of the dire enemies lurking behind the knoll watching their every movement. Craftily, and with extreme caution, we walk our horses to windward of the herd, and as we emerge from the cover of the ridge, the trumpet-like notes of the older bulls tell us that we are discovered. Concealment is now of no further use, the beasts are crowding together like sheep when scared by a dog. The Indians give a piercing whoop, and we dash wildly after the now rapidly retreating herd, their tails upheaved and their horns rattling

noisily against one another. The very plain seems to shake, clouds of blinding dust, raised by thousands of hoofs, nearly hides the hunters from each other, whilst a rumbling noise, like subdued thunder, seems to absorb and swallow up all other sounds. I soon overtake the rearmost animals, and singling out a young cow, drop her in her tracks; recharge my gun, and single out this time a fine old bull. He seems to roll rather than gallop along, his nose nearly touching the grass, and his shaggy brown mane tossing wildly in the breeze. My horse, though thoroughly up to his work, appears to know by past experiences that it is no mean foe he has to deal with; laying back his ears, and pushing out his nose, as if to make the most of every breath of air, the gallant mustang thunders on at such a pace that I find myself side by side with the shaggy bull before I have time to think of my position in reference to the other stragglers of the herd. Now or never I must fire, or lose my chance. Lowering my gun I pull the trigger.

It appeared to me that the cap had hardly exploded ere my mustang wheeled short about with such startling velocity, that it was with the utmost difficulty I contrived to retain my seat; but, as if the fates were against me, two other buffalos were directly in the way, and for a few seconds prevented the horse from galloping away from the bull, which, turning nearly as rapidly as the horse, charged, and striking the horse on the point of the shoulder sent us both rolling on the plain. I was

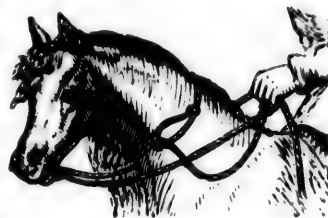
terribly frightened and shaken, but adopting Falstaff's maxim, 'that the better part of valour is discretion,' I lay still to await the issue of events. The mustang had by this time regained his legs, and was, with evident difficulty, limping away as fast as his damaged shoulder permitted. That the bull was badly wounded I could see by his rolling gait, heavy breathing, and the bloody froth besmearing his nostrils and lips. I do not think he saw me, for his glaring eyes were directed towards the horse, which he made a vigorous attempt to follow; but it proved a signal failure. The wounded beast seemed to be perfectly aware that if once he fell to the ground all hope for him was at an end, so bracing his muscles firmly, and planting his massive legs wide apart, the powerful animal seemed determined to stand up to the last. Hurt and frightened as I was, I felt sorry for him; the eyes lost all their fire, and a saddened expression took its place. He tried to get glimpses of his comrades, by this time nearly lost in the distance; and I know that dying buffalo was quite aware that he should never see them again. His great chest was heaving convulsively, and low plaintive sounds, more resembling sobs than anything else I know of, told in language plain as printed words how terrible were his sufferings. The head dropped, until the nose was nearly touching the grass, the ponderous body rocked like a storm-tossed ship from side to side, a gurgling sound replaced the

stertorous breathing ; then suddenly the muscles seemed to lose all further power, and with a heavy crash the king of the plain fell dead amidst the grass and wild flowers. The Indians soon recovered my lost steed, for his shoulder was so much injured that he could only contrive to limp slowly away.

I have stated the result of this tumble—and worse falls even than this are of constant occurrence on the plains—to show how useless is any kind of saddle having a frame made of wood or other breakable material. Nothing could save it from continually smashing ; more than this, the hunter having to encounter these heavy falls would, beyond all doubt, receive dangerous hurts from either the cantle or pommel of an ordinary saddle. Hence the ‘pad,’ for running bison, is immeasurably superior to any other description of saddle.

The bridle we carried out with us was designed for the purpose, and answered remarkably well. It consisted of an ordinary leather head-stall, with a tether rope attached to a ring under the throat, and then buckled to the brow-band ; the bit, a ‘ring-snaffle,’ was fastened to the head-stall by a double spring-hook, so that bit and reins could be readily detached, and the head-stall left on. The Mexicans and ‘stock-men’ all use the barbarous Spanish bit, with a ring of iron like a curb-chain under the lower jaw. It is always a cruel bit with the lightest hand, but murderous with a heavy one.

My advice is to dispense with the bridle altogether, and use instead a light 'lassoo' or 'cabresto' made of buffalo hair, about forty or fifty feet long; a double 'clove hitch' placed round the under jaw, and under the tongue, answers every purpose of a bit. To put on this cabresto, first place a running noose round the animal's neck, then measure rope enough, commencing from the loop of the noose, to reach from the cantle



THE CABRESTO.

of the saddle to the corner of the animal's mouth; make your 'clove hitch' and put it round the jaw, carry on the rope and tie to the loose end, coil up the slack, and hang it on the pommel as you would on a peg; you have now, if I am clear in my explanation, two 'reins' and the 'clove hitch' in lieu of a bit. If you want to dismount and tether, all you need do is to loose the tie of the reins, slip out the 'clove hitch,' then the noose round the animal's neck prevents any chance of its escaping, when fastened to a tree or tether stake.

It is a very unsafe plan to tether an animal, however quiet it may be, by a rope fastened only to a 'leather head-stall.' The most gentle mules and horses are liable to sudden alarms, either from wild beasts, Indians, bush-fires, or what not. The first impulse is to escape, and to do this mules and horses invariably 'hang back,' or in other words retreat from the point to which they

are fastened; this brings the strain to bear upon the weakest part of the 'head stall,' and it must be constructed of stronger materials than any I have ever yet met with, if it does not break like a piece of sewing cotton. The best plan, and the safest one, is to use a rope made from hair, buffalo hair being the best; to put a noose round the animal's neck, and then to take a single turn of the rope round the noose to prevent it from running up too tight upon the windpipe, but drawn sufficiently close to avoid any risk of the animal slipping its head through. Never tether with a 'hide lasso;' if you do, the wolves, cayotees, and woodrats are pretty sure to eat it in two, and you find the fag end of your tether line minus the animal which you quite expected to discover fast to it. In using the 'hair rope,' or cable-rope, instead of a bridle, as previously recommended, your tether line is always where it should be, round the animal's neck. When you are working with a 'bell,' tethering is not needed. The easiest and simplest hobble is made by buckling a strap or tying a larriette round a fore and hind leg on the same side, or tying the fore legs above the fetlocks with a strap not less than two feet long.

CHAPTER V.

Wagons and Teaming.

WAGONS cannot possibly be too simple in their construction. They should be built of thoroughly seasoned timber, and this caution applies with most force to the wheels, because where the air is hot and the atmosphere very dry, unseasoned wood cracks, shrinks, and readily splinters. At Stockton and Red Bluffs in California, the mule wagons are made in three or four divisions, so that a team of eight mules draws them easily over good level ground, but when hills have to be ascended, or wet ground got over, then the wagons are separated and taken along one at a time.

It is always a safe precaution to have a wagon pole jointed where it goes between the 'hounds;' it saves crippling off in bumping over holes. A good team of six mules ought to drag 2,000 lb. in a light wagon over any ordinary prairie land. Mules travel faster than oxen, and are better fitted to endure heat and want of water, but for a very long march, where grass is not over abundant, and no grain can be procured, then I think oxen are preferable. They are better too at a dead

steady pull, through mud and slush. Besides, oxen are cheaper, and you can eat them when they are otherwise done with.

It is a novel sight and rather a picturesque one too, in the Red River and Pembina district, to witness a procession of carts, each one drawn by a single ox harnessed into shafts after the manner of a dray-horse. A single man, called a 'bull-driver,' takes charge of eight or ten carts, and manages his team, aided by a whip (and, by the way, a person requires a vast amount of practice to be able to use 'a bull-flogger' cleverly). A young larch tree is usually selected for the haft, which should be six feet long and as pliant as a salmon rod; the thong is made of plaited green hide, and should be two inches in diameter at the centre or 'belly' of the thong, tapering towards each end, and about 3 feet to 3 feet 6 inches in length. The crack of this whip in the hands of an experienced 'bull-driver' is like the report of a rifle. Woe betide the unfortunate bullock that gets a real taste of the thong; it takes off the hair like a hot iron and raises a 'wale' as large as a sausage. The oxen are harnessed betwixt shafts like horses, and each ox and its cart will transport a load of eight hundred or a thousand pounds weight. The cart is constructed mostly of wood, and very little if any iron is used in its building. Regular trains of these primitive ox-carts follow the buffalo hunters for the purpose of carting home the hides and meat for preserving.

The creaking of the wheels, the cracking of the whips, and the continual shouting of the 'bull drivers,' cheering and abusing their teams by turns, may be heard when they are miles away.

The following extract from a work entitled 'Across the Continent,' published in the United States, and in London by Low & Co., gives such a capital account of stage travelling and of Mr. Ben Holladay, the colossal capitalist who 'runs' the Overland Stage Line, and who is certainly, according to the author Mr. Bowles, the tallest coach-proprietor that ever worked a road on the earth's surface, that I thought it quite worth appending to the chapter on teaming.

'The great Overland Stage Line, by which we are travelling, was originated by Mr. William H. Russell, of New-York, and carried on for a year or two by himself and partners, under the name of Russell, Majors, & Waddell. They failed, however, and some three years ago it passed into the hands of their chief creditor, Mr. Ben Holladay, an energetic Missourian, who had been a successful contractor for the Government and for great corporations on the Plains and the Pacific. He has since continued the line, improving, extending, and enlarging it until it is now, perhaps, the greatest enterprise owned and controlled by one man which exists in the country, if not in the world. His line of stages commences at Atchison, on the Missouri River: its first section extends across the great Plains to Denver, six

hundred and fifty miles; from here it goes on six hundred miles more to Salt Lake City, along the base of and through the Rocky Mountains at Bridger's Pass. From there to Nevada and California, about seven hundred and fifty miles further, the stage line is owned by an eastern company, and is under the management of Wells, Fargo, & Co., the express agents. All this is a daily line, and the coaches used are of the best stage pattern, well known in New England as the 'Concord coach.' From Salt Lake Mr. Holladay runs a tri-weekly coach line north and west, nine hundred and fifty miles, through Idaho to the Dalles on the Columbia River, in northern Oregon, and branching off at Fort Hall, also a tri-weekly line, to Virginia City, in Montana, four hundred miles more. From Denver, too, he has a subsidiary line into the mountain centres of Central City and Nevada, about forty miles. Over all these routes he carries the mail, and is in the receipt for this service of six hundred and fifty thousand dollars per annum from the Government. His whole extent of staging and mail contracts—not counting, of course, that under Wells, Fargo, & Co., from Salt Lake west—is two thousand seven hundred and sixty miles, to conduct which he owns some six thousand horses and mules and about two hundred and sixty coaches. All along the routes he has built stations at distances of ten to fifteen miles; he has to draw all his corn from the Missouri River; much of his hay has also to be transported hundreds of

miles; fuel for his stations comes frequently fifty and one hundred miles. The Indians last year destroyed or stole full half-a-million dollars' worth of his property—barns, houses, animals, feed, &c.; he pays a general superintendent ten thousand dollars a year; division superintendents a quarter as much; drivers and stable-keepers get seventy-five dollars a month and their living; he has to mend, and in some cases make, his own roads, so that, large as the sum paid by the Government, and high as the prices for passengers, there is an immense outlay and a great risk in conducting the enterprise. During the last year of unusually enormous prices for everything, and extensive and repeated Indian raids, Mr. Holladay has probably lost money by his stages. The previous year was one of prosperity, and the next is likely to be. But with so immense a machine, exposed to so many chances and uncertainties, the returns must always be doubtful. * * The passenger fares by his stages are now, from Atchison to Denver one hundred and seventy-five dollars, to Salt Lake three hundred and fifty dollars, to Nevada five hundred dollars, to California five hundred dollars, to Idaho five hundred dollars, to Montana five hundred dollars. These are much higher than they were two years ago, and will probably be reduced during the season, as safety from the Indians and lower prices for food and corn are assured, from thirty-three to fifty per cent. Mr. Holladay now resides in New York City, and is reported to be immensely

wealthy—say five millions. He owns and runs, also, lines of steamships in the Pacific Ocean from San Francisco, north to Oregon and British Columbia, and south to Mazatlan, Mexico, with contracts for the mails and both routes from our Government or from Maximilian of Mexico. He conducts all this immense business successfully by the choice of able and trusty managers, to whom he pays large salaries. * * Mr. Holladay visits his overland line about twice a year, and when he does, passes over it with a rapidity and a disregard of expense and rules characteristic of his irrepressible nature. A year or two ago, after the disaster to the steamer 'Golden Gate,' on the Pacific shore, by which the only partner he ever had, Mr. Edward Rust Flint, son of old Dr. Flint of Springfield, lost his life, and himself barely escaped a watery grave, he made the quickest trip overland that it is possible for one man to make before the distance is shortened by railway. He caused himself to be driven from Salt Lake to Atchison, twelve hundred and twenty miles, in six and one-half days, and was only twelve days and two hours from San Francisco to Atchison. The trip probably cost him twenty thousand dollars in wear and tear of coaches and injury to and loss of horses by the rapid driving. The only ride over the Plains, at all comparable with this, was that made by Mr. Aubrey, on a wager, from Santa Fé to Independence, seven hundred miles, in six and one-half days. But this was made on horseback, and when the rider reached his

destination he was so exhausted that he had to be lifted from his horse. How exciting the thought of such rides as these across these open fields and through these mountain gorges, that make up the half of our Continent !'

CHAPTER VI.

The more desirable form of Tent—The Lodge of the Savage—The Sibley Tent—The Bell Tent—The Gable-ended Tent—The Miner's Tent—Half-shelter Tent—Poles and Pegs—How to pitch a Tent and make it secure.

A TENT of some kind should always form part of every wanderer's equipment, if he can by any possibility carry it on his pack animals. 'Camping out' is all very well in theory; sleeping with your head on your saddle, with no other protection than the 'blue canopy of the heavens,' or 'the cloudless expanse gemmed with twinkling stars,' sounds remarkably sensational, 'lionises' the intrepid explorer, elicits delightful little scraps of sympathetic pity, and at the same time coaxes delicious compliments from fair lips, to earn which the 'lone hunter,' or he who would be such, thinks at the time he would not mind sharing a cave with the tallest kind of a grizzly to earn a tithe of the praise; but when far away from fair faces, loving eyes, and rosy lips, no man who had a single grain of experience would voluntarily sleep in the open air, if a tent or covering of any kind were procurable.

The form which is most desirable for a tent is a

question on which opinions vary greatly. For military purposes the 'bell-tent' seems to me to be the more convenient pattern. The circle round the supporting pole affords more room for sleeping than does any tent wherein there are necessarily angles.

Indians always adopt the circle for their lodges, when moving about; but for their large permanent residences they choose the square, and roof it with a single slant; immense sheds are thus made from rough cedar slabs by the Coast, Fraser, and Vancouver Island savages, for winter quarters. For easy transport, a 'bell-tent' is too heavy, requiring two men to pitch it, and in close timber its height is an objection, whilst in very hard wind it is easily blown over, if not secured by 'guy' ropes. The United States Commission, working jointly with us on the Boundary-line, used to a great extent the Sibley tent, which is most commodious and comfortable. In form it is conical, and the apex is constructed on the principle of the 'cowl' or 'presbyterian' frequently placed on the top of smoky chimneys as a curative agent. This contrivance leaves an opening always in the course of the wind, which ventilates the tent and allows the smoke to escape, without any risk of its being blown back again into the interior.



SIBLEY TENT.

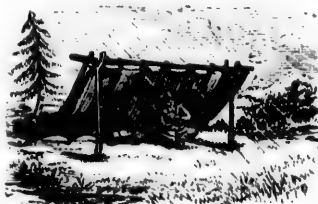
An iron tripod with a short chain fixed to it, and so constructed as to fold up with the 'tent-gear,' is for the purpose of being placed over the fire, which should be built on the ground in the centre of the tent during cold or wet weather, but outside if fine and warm. The 'camp kettle' hangs from the chain—a contrivance that considerably facilitates the process of cooking. The Bell and Sibley tents, the latter of American invention, are both admirable, as affording convenience in height, room to move about, and perfect shelter from the heaviest rain if well pitched. By turning up the 'apron' encircling the bottom, so as to allow a current of air to blow through, they can be made cool and enjoyable in the hottest sunshine. If occupied by soldiers, I think a 'Sibley-tent' will sleep twelve, or more, arranged as the spokes are in a wheel, the men's heads being towards the canvas, and their feet to the fire, or the centre pole, which stands on the top of the tripod. This is one great advantage the Sibley has over our ordinary military 'bell-tent:' it permits a fire in the centre of the tent, which is impossible in ours, unless a small stove is used, and the tent pitched on the edge of a hole excavated for the purpose, so as to allow the stove-pipe to pass through the ground beneath the canvas, a system never available unless at a depôt or a camp intended for long occupation. Not that I think a fire in a tent is so very desirable, unless it be in continuous wet weather, or during a heavy fall of snow; then being

able to sit by a fire, protected from the weather, is undeniably a great luxury.

Against these several advantages must be placed as a counterpoise, the weight and cumbersome size of the package, when either the Bell or Sibley tents are rolled up for transport. Although the centre pole may be ferruled, and divided into two parts, nevertheless, the length is even then very obstructive to convenience of 'packing' on the backs of mules, and they are further extremely liable to get broken. The tents themselves are particularly heavy and bulky, and should it be necessary, as it constantly is, when travelling, to roll them up wet, the weight is enormous. For wagon or ambulance transport, where the addition of a few pounds weight is of no material consequence, these tents are admirable, indeed all the most fastidious campaigner could desire; and if well and judiciously pitched, afford comfort and protection equal to log-houses. The gold-diggers have a very simple plan of protecting themselves from the weather whilst sleeping. They provide themselves with a long strip of light cotton canvas, which is easily carried even on one's own back. When camping, two sticks, each about four feet long, are cut with a small fork at the ends. These are driven into the ground six feet apart. Then a third and a lighter pole is placed on the forked ends of the uprights—this one should be rather more than seven feet long. Over it the cotton awning is placed, and then pegged firmly to the ground. One end, that towards the wind,

is fastened together, either with pieces of string, or what I prefer, wooden skewers. The other end is left open for the occupant to creep in at, and skewered together when he is in. By making the ridge-stick rather longer than the supports, the cotton covering can be fastened so as to leave the forked sticks outside, a plan that affords more room, and enables you to bring the edges of the cover slightly to overlap.

A very capital protection against heavy rain may be conveniently rigged up by using the *aparejo* covers, a piece of canvas, or slabs of bark, if nothing better is procurable. This half-shelter tent is exceedingly

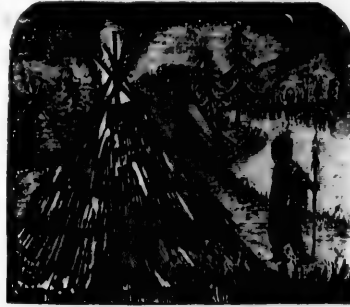


HALF-SHELTER TENT.

useful when on hunting or trapping excursions. An additional pound weight upon these occasions is of great consequence; the lighter a hunter can make his equipment the better for himself and his horse, hence the knowledge of any expedient by which he can add to his comfort and keep his cloths dry, without carrying the material to do it with, is sure to prove useful. Bark and branches of wood are generally procurable; either of these materials laid first against the frame, shown in the cut, and then covered over with grass or rushes, will make a slant nearly if not quite water-proof. I have frequently slept under a contrivance erected in this fashion during a night of pouring rain, and kept myself quite dry. It is almost superfluous to

say, this 'half-shelter' should be always on the weather side.

I have tried these contrivances at the diggings; lived in a Sibley tent in North-west America, in a Bell-tent in the Crimea, in a Turkish tent with eight sides in Asia Minor, in a Bedouin Arab's tent, in Indian wigwams east and west of the Rocky Mountains, and in Palmetto shantees in the



INDIAN REED-MAT LODGE.
(From a photograph.)

tropical world, and I have camped in the open air, much oftener than I thought agreeable, at times when I could not avoid it, but after all, the tent I prefer is the 'dog-kennel,' or 'gable-ended tent;' the size a 10-ell. The 'upright poles' should be six feet, and the 'ridge-pole' seven feet long. Each of these three poles must be ferruled in the centre with a strong ferrule of galvanised iron. The ends of the two uprights should be made sharply conical, and then shod with iron thimbles, forged to fit on to the conical ends, and each thimble must be firmly fixed by two iron pegs, passed through it and the pole, and then securely riveted. The usual plan adopted by tent-makers is to drive a small iron wire peg into the ends of the uprights,



GABLE-ENDED OR DOG-KENNEL
TENT.

which pegs pass through holes in the 'ridge poles' and canvas, and serve as a means for attaching the 'guy' ropes to the outside of the tent. But in 'packing' it will be found that these slender pegs are continually broken or bent, and added to this, there is always a good deal of bother in finding the hole in the canvas when pitching a tent, and for 'gable-ended tents' I contend that 'guy' ropes are perfectly non-essentials. By using the conical ends shod with iron, it matters not which end of the pole is uppermost, and all that is required in the ridge-pole is a small cone-shaped hole for the end of the upright to fit into; the other end slightly penetrating the ground, holds firmly, and keeps the tent steady. One man unaided can, with a very small amount of practice, pitch this three-pole gable-ended tent in from eight to ten minutes.

I hear some one exclaim, 'Why carry poles at all, when travelling through the very midst of a thickly wooded country? Surely you can cut them whenever and wheresoever you camp?' So I thought once, until experience taught me lessons of wisdom, and then I discovered that tent-poles were not so easy to procure, and cut at a moment's notice—although one was travelling through a country densely timbered—as most persons would *à priori* be disposed to believe. I advise all travellers to carry their tent poles with them; trusting to the mere chance of finding poles 'all a growing,' fitted for your purpose, and needing only to be chopped down, is a bad plan. Supposing you

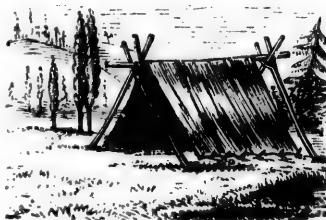
are fortunate enough to find what suits your purpose, long delay is necessitated in cutting, fitting, and adapting the green poles to fit the canvas, the tent is never steady, and you are in a perpetual fidget that it may at any moment fall in upon you whilst you are sleeping. If, on the other hand, poles are not procurable, and this, let me assure all young 'wanderers,' is by far the more probable contingency, then your tent is useless, and you may have to lie and moan over your disappointed hopes, cooled, if not refreshed, by a shower-bath of rain, which serves alike to damp your courage and your clothes; and begets a wise resolve, ere morning comes, never to venture on another march without carrying tent-poles along with you. Exactly the same advice applies to the 'tent-pegs;' it is utter misery having to cut pegs at camping-time, and sticks cut green with a crook at the end never 'drive' well, or hold when driven; old barrel staves form the best materials out of which to saw 'tent-pegs;' the pegs stow easily in the bag with the tent, and do not, in any appreciable degree, increase its bulk as a package. Spare ones should always be carried, when travelling, as tent-pegs, like clothes-pegs used by laundry women, or pins employed by everybody, are from some cause difficult of explanation constantly diminishing in numbers. A light wooden mallet for driving the pegs is also another essential, which should be packed in the bag which contains the tent and pegs.

When we were equipping the Boundary Commission, prior to our leaving England, her Majesty's Commissioner deemed it expedient to adopt the form of tent used, and strongly recommended, by the Honourable Hudson's Bay Company, which is the 'gable-ended' tent I so strongly advocate. We had them made at Limehouse of three sizes, 12-ell, 10-ell, and 8-ell, but the poles were not ferruled, and only fitted with a wire peg in the end. It certainly at that time seemed to my mind the height of folly to take tent-poles from England to Vancouver Island, on which the finest pine timber in the world grows in prodigal abundance, but from the experience I subsequently gleaned, I found it was by far the wiser plan; and had I to go out there, or anywhere else, where a tent was desirable to-morrow, I would take the whole thing completed. In some measure to repeat what I have previously said, I should take a 10-ell tent, fitted with a seven-foot ferruled ridge-pole, made of good pine, and two six-feet uprights also ferruled, and capped with conical iron thimbles; three dozen tent-pegs; made of seasoned oak, and two ash-mallets. The tent-pegs and mallets to be fitted into a painted canvas bag, made round at the bottom, and finished to tie like a corn-sack at the top, by plaiting the canvas, and fastening the cord round the plaits. When the string is 'run in,' so that the mouth may be 'drawn up,' an orifice is generally left sufficiently large to allow the tent-pegs to escape at, and when reaching the camping ground

one has to waste an hour foraging for new pegs, which are not worth a straw when compared to those this stupid system of—I cannot say fastening tent bags—has caused one to lose. The tent-poles we carried with us from England—although I dare say many of my readers will even now say it was vastly like, to use an every-day simile, ‘taking coals to Newcastle,’ made very little difference to the weight or cubic measurement of baggage necessitated for the supply of so large a party, and for accomplishing such a laborious undertaking as was that of marking the forty-ninth parallel of latitude—the ‘Boundary-line’—dividing British Columbia from the lands of the United States.

On landing our party, about seventy-five persons, on Vancouver Island, it was imperative that all should at once go ‘under canvas.’ Poles and pegs being ready, the tents were all pitched in no time, tools were not required, and our tiny canvas city was built and occupied in less time than it would have taken to cut and fit a dozen poles. After commencing our work of cutting the Boundary-line, to accomplish which a corps of fifty American axemen was required, it was found desirable to have very much larger tents made for the chopping gangs than those we brought from England, tents sufficiently capacious to accommodate twelve or fifteen axemen. When several men were working together, a large tent was easily pitched by their united labour, and as they did not

'shift camp' more frequently as a rule than once in every twelve or fourteen days, one large tent was found to answer far better than three or four smaller ones. These large tents were generally slung; the poles in this case have to be cut, as they were required to be large and strong; five are needed for one large tent. The 'ridge-pole' rests on the fork made by the ends of the other four poles. Two of the lateral poles should be cut with a natural fork; by



AXEMAN'S TENT.

resting the ends of the two other poles in these, all trouble of tying is dispensed with, and the tent when pitched will be firmer and steadier than if poles lashed at the top were employed. More than this, rope,

cord, or raw-hide, cannot always be obtained at a minute's notice. The poles so arranged are then placed at either end of the tent, the bottoms of the poles being pulled as far apart as it is desirable to get them. The canvas



SHUT UP FOR THE NIGHT.

is first thrown over the ridge-pole thus kept up, and then it is pegged firmly into the ground. If I am clearly understood, it will be seen that in this mode of 'pitching a tent' the supporting poles are out

side the canvas, instead of inside, where the poles must always be, if only two uprights are used.

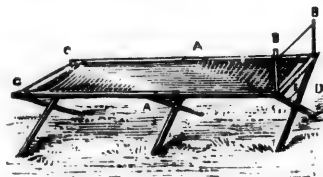
CHAPTER VII.

A Hunter's Bedding—Bedding for Tents or Log-houses—Bedstead, how to make—Systems of Packing up Bedding—Tools necessary for a Wanderer—The way to fell your first Tree—How to split a Log—Traps to be avoided.

If you start either 'hunting' (I use the word 'hunter' in its Transatlantic sense, as meaning one who shoots, traps, or otherwise destroys wild animals and game), trapping, prospecting, or in search of an eligible 'location,' whereon to 'squat,' and 'clear' or 'fence' in a farm, you will require but few if any superfluities. In the shape of bedding, a couple of blankets carried under the saddle, a 'buffalo robe' rolled up in a piece of stout hide, and tied behind the saddle cantle, ought to suffice for a week or two, if roughing it; but when provided with mules or other means of transport, then being provided with proper bedding will be found a great comfort; one mule ought to carry the 'full kit' or outfit of two persons. It will be as well perhaps to describe briefly the summer and winter systems for sleeping adopted by the Boundary Commission, as we found them to answer perfectly. The men, consisting of about seventy sappers, and fifty axemen and packers, were

wintered for two consecutive years at Colville, on the upper Columbia, in log-houses, of which I shall say something further on. The temperature was often as low as 30° and 32° below zero, and an average depth of 18 inches of snow covered the ground from the beginning of November to the end of April. The sappers had a requisite supply of blankets served out to them, but the axemen and packers had to provide their own. In the log-houses built for the men 'bunks' were constructed round the sides just as they are arranged in the fore-castle of a ship, or in the best cabins for that matter, and in these the men slept comfortably enough. The officers had each a small log-house for sleeping and sitting in, a general mess-room being provided for the victualling department.

The bedstead I used, and prefer as best suited to a permanent camp, or for general travelling, consists of



CAMP-BEDSTEAD.

- A A Ferrules.
- B B Head-rope.
- C C Foot-rope.
- D Pivot on which the legs fold.
- E Cross rope to keep the legs from expanding.

two side-poles, measuring from about 7 to 8 feet in length, made of tough wood and ferruled in the centre with a strong ferrule made of galvanised iron, supported on three pairs of legs crossed like those of a tressil; a strip of canvas is so sewn as to allow the

two lateral poles to pass through loops, or what is preferable, a continuous hole from end to end. This

affair, a common pattern of camp bedstead, minus the ferrules, is sold by most metropolitan outfitters, is rapidly put together, and is very comfortable to sleep on; but if this bedstead gets broken, as according to my experience it constantly does, then a capital substitute can be provided, by a judicious use of the axe, the canvas belonging to the broken bedstead, and the timber growing round about you. My remarks apply to furnishing a log shanty. Sleeping on the floor may be well enough if one cannot help it, but as a rule, a few simple contrivances, which can be provided in an hour, will make the 'wanderer' fifty times more 'at home,' save him many a bad cold, rest him better when weary, and economise heat equal to that of two blankets, by elevating his body above the draughts.

Look out for a straight pine or larch, about two feet in diameter, chop it down, and 'log off' twounks, each about five feet in length; then look out for two poles, as straight as you can find them, each about eight feet in length. Roll your logs into the shanty, place one where the head of your bed is to be, and the other for the foot; now measure three feet six inches in the centre of each log, and at the end of the measure-marks chop a deep notch, and mind you chop the inside piece vertically, or leaning over at the



LOG OR MAKESHIFT BEDSTEAD.

top a little will be still better and slant the outermost wall of the notch or that part of it which will be the nearest to the end. Then run your poles through the eyes or loops in the canvas, drop the ends of the poles into the notches, and you have a bedstead fit for an emperor to repose on. When you move camp, all you have to do is to slip out the poles from the canvas, roll it up, and leave the logs and poles in readiness for your return, or the next comer if you never do go back.

A small mattress, stuffed with horse-hair, the size of which should not exceed three feet, or three feet six inches in width, and six feet in length, will be found to be an immense convenience; in winter you can lay it over your canvas to sleep on at night, or use it for a lounge during the idle hours of the day. Two good blankets during summer, and four during the winter, a buffalo skin or 'robe' as a dressed buffalo hide is styled, and a good large waterproof wrapper or ground sheet, to spread on the ground when camping during the summer, and to roll the bedding in when traveling, will about complete the bedding arrangements. Let me impress upon the minds of all travellers a golden rule: never omit seeing to the 'rolling' up of your bedding. There is a right and a wrong way of doing it; if managed as it should be, no wet can get into the blankets, however hard it may pour with rain, or if the pack-animal carrying the tent-freight amuses itself by rolling in every stream it arrives at, a pastime mules

are very much predisposed to indulge in if they are not looked sharply after. Should the weather be fine, pack your 'dressing gear' if you are going to shift camp, 'strike' your tent, fold, roll, and place it in its bag, with the pegs and mallet, and tie your poles tightly together. Now carefully fold your blankets to the length, and a trifle narrower than the mattress, and lay them on it, double your buffalo robe, and place the mattress and its contents upon it. Begin at one end, and roll the whole tightly, turning in the ends of the 'robe' as you progress in rolling, having a stout cord or a small 'hide rope' ready to tie round as tightly as you can haul it. The more compact this bundle can be made the better it will be found to pack. Then spread the waterproof camp sheet, and lay the bundle on one side of it, and bring the edges of the waterproof over each end of the bedding, and thus continue to roll it in the camp sheet. By doing



THE WAY TO FOLD BEDDING AND CLOTHES IN A WATERPROOF WRAPPER.

this it is next to an impossibility for water to find an entrance. The whole should, lastly, be securely lashed with a stout hide rope, or 'lassoo.'

To find all one's bedding saturated with wet—a misfortune I have often had happen, arising to my trusting another with what I ought to have seen to myself—when camping after a day's march, would aggravate a

saint. Those painted canvas 'bed envelopes,' artistically fitted up with buckles and leather straps, made round at each end, and bound with drab-coloured leather, containing what is called by outfitters a 'complete camp bed,' I would not accept as a gift, if compelled to take one abroad to be used for mule travelling. It may answer very well for army purposes, where all baggage is conveyed in wagons; but take advice, and never purchase a 'complete camp bed.' If you want what is really and practically useful, rather procure each of the articles I have recommended at the best shop, and of the best quality. A stout 'India-rubber camp sheet,' or a square of canvas soaked in boiled linseed oil, will answer better to wrap round your bedding than any 'case' or envelope made for the purpose I have as yet seen. With a 'case,' if a hole rubs through it, or a snag tears it, there arises the immediate necessity to repair the damage, or the chances of a wet bed are before you. With a wrapper rolled many times round, the probabilities are ten to one against a hole being torn through all the enwraps; and if such a mishap should occur, why, it is only to alter the rolling, and the holes are securely hid, and hence effectually stopped.

Another advantage a plain camp sheet has over a 'bed case' is, that you can spread it on the ground when sleeping in a tent to place your mattress on; for in a tent a bedstead is a useless encumbrance. If it rains, and there is any chance of the water draining

underneath the tent, all that is necessary is to fold the sides and ends of the waterproof up over the bed after you have safely turned in, and let the water find its way past and under you. There can be no fear of getting wet underneath so long as the edges are well turned up. I never use a pillow, as it increases the size of the bundle, and I find my clothes when folded up answer every purpose. Moreover, this plan keeps your garments from the chance of getting wet. We found this plan of sleeping on the ground, 'and rolling the bedding,' to answer admirably whilst doing the Commission work, and nearly all the officers dispensed with the 'bed case' altogether, and the bedstead during the summer field-work.

A very useful chair, or rather make-shift seat, can be easily contrived by cutting a cask, as shown in the illustration, then filling the under part with dry grass or moss, and nailing a strip of canvas or hide across the bottom or seat part. It is far preferable to perching on a log, can be made in ten minutes, and abandoned when shifting camp.



BARREL-CHAIR.

In regard to tools, a great deal must depend upon the object of your journey. If you are bent upon any special mission, requiring for its due accomplishment tools of a particular character, such tools can be best

selected by the person who is going to use them, and no advice I can offer will be of any practical value ; but for all ordinary travelling a skilled wanderer needs only an American axe, a three-inch auger, a couple of gimlets, a stout clasp-knife containing several blades, and being besides a sort of '*omnium gatherum*' of little tools, as, for instance, a punch for leather, a lancet, a saw, a screw-driver, touch-hole pricker, together with others I need not enumerate ; a case-knife to be worn at the waist-belt, and for this I have found the knife in use by pork-butchers the best kind for all ordinary purposes ; it is strong, usually made of good steel, has a riveted box-wood handle, and its shape fits it for all sorts of uses, either to flay a buffalo, paunch a buck, mend a pen, or skin a humming bird. The blade should be fitted with a stout pig-skin case, and kept from falling out by a small leather strap and buckle, fastened to the sheath for the purpose of being buckled round the haft of the knife. When the traveller is on horseback or walking through dense timber, a knife is apt to slip from its sheath unless secured. Losing a good case or other kind of knife is by no means a trifling matter to the dweller in the wilderness.

Thus equipped, if the wanderer knows how to use the tools he has, he can do nearly anything and everything ; build a log-cabin, split shingles to roof it, and make, as I shall by-and-by show how, a fire-place, door, latch, hinges, and windows ; rafts can be also constructed,

bridges made, and logs hollowed into safe and shapely canoes. Indeed, an axe and auger, in the hands of a man thoroughly up to his work, and skilled in all the arts of an axeman, are equal to a chest of carpenter's tools, employed by a novice or inefficient workman. No one from mere hearsay evidence would believe how many things a back-woodsman can accomplish with an axe. Trees measuring eight and ten feet in diameter, counted by hundreds, were cut down by our Boundary Commission corps of axemen, two men only at a tree, with a rapidity utterly astonishing; trees that no ordinary woodsman would 'fall' in a day, were stretched upon the ground by their brawny arms in less than an hour. To use perfectly the American wedge-shaped axe (and here let me say, that it is the only axe for felling timber, and doing everything with, which is worth one straw), requires no ordinary degree of skill and practice. Strength, of course, has something to do with it; still, a man of only moderate muscular power would beat a giant into being ashamed of himself, if the weaker man did, and the stronger man did not, know how to wield an axe. The axe I prefer for all ordinary purposes ought to weigh about eight pounds, and it should be carefully mounted, or 'hung,' as the term is, on a springy, rightly curved, hiccory handle.

Now for a few brief instructions for 'green hands;' and should you think, most courteous 'wanderers,' that these hints are altogether superfluous, let me ask

you to try your hand on any log within your reach, using an American axe, and it strikes me you will discover that it is far more easy to amputate your toes, or split your shin-bones, than it is to cut the log into proper lengths for splitting, the ends of the severed portion to be left as smooth and true as wedges cut purposely. All our sappers were indignant when, on landing at Vancouver Island, they were told they must be taught how to 'chop.' Nevertheless, scarcely one of them, after the experience of nearly four years, was, to use a Yankeeism, a 'patch' upon one of our regular staff of axemen.

Let us suppose you are going to fell your first tree; be careful to discover how the tree leans, and always choose that side towards which it inclines to begin on; by doing this you avoid the risk of falling the tree on yourself. Stand off from the trunk, so that the edge of your axe-blade can touch the centre of it, whilst both your hands are grasping the handle before the knot



HOW TO FELL A TREE

at the end of it, purposely made to prevent it from slipping out of the grasp in the act of chopping; fix your eye on a spot about three feet from the ground on the tree-trunk, plant your feet firmly, look carefully behind you to make sure that there are no small twigs or branches to intercept the axe—I have seen the omis-

sion of this little precaution lead to most dangerous accidents—then holding the handle by the extreme end, not too firmly, or it will jar your wrists, and whirling the axe at arm's length round your head, bring it obliquely down upon the spot you have fixed your eye on. If you bring the edge down at the proper slant, the blade should be nearly buried in the bark and timber; if you do not, it will 'glance,' and then look out for your legs. Repeat this cut if you can; an axeman would, twice or three times following in the same place; should the tree be, for example, four feet in diameter, chop in the next cut you make three feet lower down than where you made the first cut, but this time horizontally, always bringing the axe round at arm's length. This will give you the 'right-sized chip,' to use a 'lumberer's' phrase; or what he means, in other words, is, that the three-feet notch will enable the chopper to make the wedge end of the tree break in the centre of the stump; if you took a smaller notch, as nine out of ten inexperienced men would do, you would find your axe jammed before you could chop half-way through the trunk; hence, the 'length of the chop' is always in proportion to the girth or diameter of the tree to be felled. Cut half-way through the tree, always keeping the lower surface horizontal and smooth, as if planed; then change, and begin on the opposite side to that on which you have been chopping, precisely in the same way as you began the other cut; when you

are nearly through, the tree will crack off, and of course fall in the direction to which it leaned; that is away from you.

To split a log never stand it on its end; lay it flat on the ground, commence at one end, chop the axe in as far as you can, free it, and chop in again, close to and in a line with the first cut, and so proceed along the length of the log. A log eight feet in diameter and twenty long can be easily split by adopting this plan, without the aid of wedges; two skilled axemen, by working one axe in so as to free the other, and continuing alternately to bury their axes in the fallen tree along its length, can easily split an immense tree from end to end. Wedges are often used, and although I need hardly name it as a caution, still it may be a useful hint, to mention two cases of terrible suffering, both of which ended fatally to 'lumberers' employed in splitting heavy timber.

One of the two was wedging open a large pine which had been 'felled.' He had driven three wedges, one after another, and thus opened a considerable fissure; the first two wedges were loose, so that one of them came out easily, but the second being rather more firmly fixed, required to be knocked clear with the mallet or 'wedge beetle.' Holding the top of the wedge with one hand and striking it with the mallet held in the other, it suddenly slipped, and the jerk threw him forwards. Dropping the wedge and instinctively pushing his left hand

forward to save himself from falling, he most unfortunately pushed it into the gaping crack, a matter that would have been of no consequence if the third wedge had not suddenly 'sprung,' or slipped from out its place. In an instant the crack closed, and firmer than any steel trap ever held a beaver the fissure shut upon and held the wretched man by the wrist and hand. Luckily in this case there were other 'lumberers' at work near by, who hearing the shrieks of their comrade ran to his aid; and wedges driven by muscular arms wielding massive mallets, soon released the sufferer from this novel trap of his own making. He was taken to his cabin and medical aid obtained, but although the hand and wrist, crushed to a mummy, were together amputated, still the shock was too great even for so hardy a man's physical endurance and system to bear up against; the wound became gangrenous, and the axeman died.

The second misfortune befell an axeman who was 'logging' up a very large tree into four feet lengths for splitting into 'cord wood.'

To axe a tree into logs it is necessary to stand on it and chop between your legs, adopting exactly the same law as regards the size of the notch, or 'chop,' as explained



LOGGING UP A TREE.

when speaking of 'felling' a tree; only in this case both the right and left cuts are made obliquely, the ends of

each log, when the tree is divided, being wedge-shaped. Having cut half through, the axeman turns round and commences on the opposite side. An immense amount of practice is required to enable a man to 'log' timber cleverly. In the first place, it is extremely difficult to stand on a tree lying on the ground, and chop betwixt your feet, your legs being well apart; in the next place, few but the most practised hands can make the two 'cuts' meet exactly in the centre of the tree trunk. I have often seen a tree 250 feet long 'axed' into four-foot lengths without a log being moved or displaced; so accurately did all the notches meet, that division was accomplished without knocking one of the ends out of the straight line. In the third place, if the axe is not brought down as it is *swung* round at the extreme end of the handle, exactly true to the slant of the notch, it will be certain to 'glance,' and then if you do not require a wooden leg for the rest of your life, why, you may congratulate yourself upon possessing a greater share of luck than falls to the lot of most young choppers.

The man had finished his logging, and had commenced splitting. I have said that the logs, after being chopped one from another, are seldom displaced, so that the 'lumberman,' when he splits them, still stands and works upon the log he is going to divide with immense wooden and iron wedges, to be driven by a ponderous mallet, the axeman having first made a place with his axe

to insert a wedge into the oblique cut in the log's end. The lumberer I am speaking of began his task, wedge followed wedge, and with many a creak and groan the tough fibres yielded to the resistless force of the wedges. Soon a yawning crack opened along the log, and in a brief space it would have been in two, but by some mischance the man slipped, and, just as in the other case of the hand, the wedge 'sprung,' and allowed the crack to close upon his foot. Having tried every means available to free himself, but in vain; shouting he knew to be useless, as there was no one within hail, and night was coming on, and he was well aware that the bitter cold of a northern winter must end his life long before any help could be reasonably anticipated. In this agony of mind and intensity of bodily suffering, with mad despair the poor fellow seized the axe, and at a single chop severed his leg from the imprisoned foot; with wonderful presence of mind he tied a ligature round to prevent it from bleeding, and then dragged himself along in the direction of his cabin, some distance away. It is doubtful if he ever would have reached it had not some lumberers by mere chance passed within hail.

I need merely add that all was done for the gallant sufferer that medical skill and the care of anxious relatives could do, but, spite of all, he too died. There are a great many very similar stories told of like mishaps which have from time to time befallen the

Canadian backwoodsman, but these two I relate as having come under my own immediate observation. Moral: When splitting always be careful to keep your feet and hands from out the cracks, or you may be trapped and caught like four-footed beasts are, for the sake of their furry jackets.

CHAPTER VIII.

Cooking Utensils—A Fryingpan equal to any emergency—Tea and Coffee *versus* Rum and Water—Canteens more ornamental than useful—The Plan for making your own Camp Baskets—Iron Ovens—Camp Kettles—Flour better than Biscuit—Yeast Powder. How to bake a Loaf—Fixed Ovens.

COOKING utensils must, like everything else, entirely depend, as regards number and variety, upon the means of transport at the 'wanderer's' disposal. When I start alone on a 'hunting' or 'prospecting' trip I never carry more than a fryingpan and a tin pannikin; the former I strap behind my saddle already described, the latter I wear attached to my waist-belt by the handle. It is wonderful what a man can do with a 'fryingpan,' it is equal to any emergency. I have heard lots of fellows talk about, and I invariably read in 'hunter's' stories, of 'grilling on the glowing embers,' 'roasting by the camp-fire,' and 'baking a damper on the ashes.' Armed with my fryingpan I look upon all these contingencies as 'utter bosh.' I should like to see any buffalo cow-ribs or slice from a fat juicy moose, smoked, scorched, dried, and peppered with ashes, as it always is when grilled upon the embers, at least, accord-

ing to my experience, that could bear any comparison to the artistic '*bonne-bouche*' I can turn out from my fryingpan. Why, it would make any civic dignitary's mouth tingle with delight if his nose only sniffed the rich appetising odour that exhales from a moose steak; mind, I say fried in its own fat. Then I can bake bread in my fryingpan, make and fry pancakes, or 'slap-jacks,' as trappers call them, roast my coffee, boil the salt out of my bacon before I fry it; I can also stew birds, or, putting a crust over, produce a pie few would be disposed to turn away from. Then, what do you say to the trout, salmon, white and round fish, one hooks out of the cold crystal streams? Where would you be without a fryingpan? A nice mess your 'embers' would make of a salmon cutlet, or a two-pound trout; but properly provided with this '*multum in parvo*,' just a dust over with flour and a bit of deer-grease to keep the fish from sticking to the pan, and you can turn out a brown delicious dainty, such as would make any man wish for a throat as long as a 'rope-walk, paved all the way with palate.'

If you take my advice, young wanderers, you will never travel without a fryingpan; the handle should be constructed to detach, but ought to be of a good length. The pannikin is useful to boil your coffee in, that is if you have any, and except you have a pack-train the raw coffee berry is the only form in which material for brewing the 'cup that cheers but does not inebriate'

can be conveniently carried. Still, despite all the 'cheering' properties ascribed to tea and coffee when camping after a hard day, tired, cold, wet, and lonely, I say, give me a good horn of hot rum-and-water in preference to the much loved Congou, or the fragrant decoction from the berry of Mocha. Many will cry out, 'What a depraved taste!' All I shall attempt to say in defence of my depravity is, that I have tried both during extreme hardship, and rum-and-water sets me up, warms me from my head to my heels, and under its influence I turn into sleep as a hunter only can sleep. Tea, if it can be procured, does not do this, and coffee made from berries, tough and hard as bits of hiccory, roasted in a frying-pan, then pounded up betwixt two stones, tied into the toe of a sock, and, lastly, boiled in the pannikin until black and bitter, and in flavour remarkably like to porter mixed with Epsom salts, is, to my palate, not a mixture at all calculated to impart very lively emotions to a tired traveller; but '*de gustibus non est disputandum*.'

On the other hand, where we have a comfortable pack-train, such as we are supposed to possess, fellow-wanderers, then we can afford to be luxurious in our tastes. I do not believe in 'canteens,' so called, 'which contain everything necessary for a traveller's comfort and convenience,' according to the advertisements. Just go to an outfitter's, and turn the contents of one upon the floor. If you are able to put all the things you find in it back again, you may venture to try your hand at a

Chinese puzzle with a very fair chance of success. Not five things in it are of any possible use. There is a gridiron about the size and strength of the door of a wire mouse-trap ; a fryingpan about big enough to fry the half of a musk rat, and so thin that a week's work burns it into holes, and it needs the vigilance and eyes of Argus to keep what you fry from burning ; tin cups and saucers that are so thin that they bend on the slightest pressure, and get so hot, when tea or aught else is poured in them, that the 'Fire King' of Cremona could not drink out of a 'canteen' cup until cooled. Then there are knives, forks, spoons, plates, and hosts of things besides, which I need not enumerate, all placed by a most ingenious arrangement—a secret by the way no one but the maker or seller ever acquires—in two galvanized iron or tin cans, covered with painted canvas, and which shut over one another, and are intended to be used as buckets when emptied of their contents. The first haul the packers give a 'riata' converts the shut tin cans into the shape of an hour-glass, and reduces the contents to much the same form as they might be supposed to appear in if put in at one end of a mangle and brought out at the other. If you are wise, have nothing to do with a canteen ; it is an expenditure of 5*l.* or 6*l.* utterly thrown away, and more than this, you encumber yourself with a lot of useless things, that leak, bend, and spoil, in the lieu of such as would have lasted you until your ramble

had ended. My advice is, use cups, saucers, plates, and dishes, indeed everything classed under the generic head of 'crockery,' of enamelled iron. We used this material during the entire work of the Commission; everything we took out with us either for private use or public mess property, in the crockery line, was made of iron enamelled with white on the inside. I was foolish enough, as well as others, to buy a 'canteen,' but it did not stand a month's travelling.

I should take as an equipment for one, and that will equally apply to a hundred, a cup and saucer made of the material I have named; three plates, cheese, soup, and dinner; two drinking cups without handles; a wash basin, and a slop basin. This I take to be an ample supply of crockery. Then two good knives, a small one and a large one; four spoons, two tea, one dessert, and one table; a little affair to hold salt in one end and pepper in the other; a candlestick, made to screw together like a tobacco box, and a few stout canisters to contain tea, sugar, &c.; a fryingpan, of course, and a tin teapot. All these items, and any others your fancy may dispose you to wish for, I should have packed into two strong wicker baskets, of equal size. You will have to get them made on purpose, any basket-maker will do it, with divisions inside for fastening the things in. Have an iron fastening woven into each of the baskets to shut with a padlock. The best shape for the baskets is that of an ordinary 'fishing-basket' length-

ened laterally. Each basket should have a small tarpaulin fixed to it, large enough to hang well over the cover, and a short distance down the basket, which should also be lined firmly with the same material.

These baskets properly packed—I should not have them more than three feet long and one foot six inches wide—will contain an immense quantity of odds and ends,—‘possibles,’ as we call them. They can be packed readily on a mule or horse, and no pressure from the ‘riata’ can do them any harm. The contents cannot get wet if it rains for a month, and should the pack-animal indulge itself with a roll in the stream, you have the satisfaction to find your mess requisites all dry. I know of few things more unsatisfactory than to discover on camping that your tobacco is in great flabby leaves, your tea just as housemaids use it to sweep carpets with, your sugar a weak syrup, your bread a poultice, and everything besides, damp, sodden, and completely spoiled; and on this state of affairs you may generally calculate if you indulge in those trashy canteens. There are two more things we found of incalculable value, and which added very materially to the comforts of both officers and men during the Commission work, which I should advise all who visit wild countries to take with them. I do not deem them essential additions to the ‘kit,’ but as they can be easily carried on mule or horseback, there can be no objection to taking them out with you. These two articles are a wrought-iron camp kettle

to hold two gallons, and a small iron oven about eight or ten inches in diameter. This turned over a loaf and buried in the hot ashes of the camp-fire bakes it even better than any baker's oven.

We found these small iron ovens of immense value both in summer and winter, whilst marking the north-west Boundary-line. Flour is very much more easily conveyed on mule-back than 'hard bread' or biscuit. In other words, it is less liable to become injured from wet, and when issued as a daily ration can be appropriated to the making of a variety of eatable matters; whereas biscuit rapidly mildews if damped, soon becomes the home and habitation of the weevil legion, and must be eaten as a biscuit, and that only. In rationing men, a change in the diet list, according to my experience, is at all times desirable, whenever practicable. Hence it was found very much more advantageous for the men to have flour and a small ration of 'yeast powder' issued to them than it would have been to have given them biscuit; but to use flour to advantage a baking oven is quite essential, and these small cast-iron ovens we found equal to any ordinary requirement. The men soon learned to make capital loaves; and here let me record my unmeasured praise of 'Preston and Merrill's' yeast powder, which I contend is equal, if not superior, to any material in use for 'rising bread,' and I strongly advise 'wanderers' and parties engaged in 'field work' of any kind, in a wild country,

never to travel without flour, yeast powder, and a few small cast-iron ovens. After the loaf is made, all that is requisite to do in regard to baking it is to brush away the ashes of the camp fire, in order to make a clean spot to place the loaf on, then turn the iron oven over it, and bury up the whole with red-hot ashes. When you think the loaf is nearly baked, remove the oven, and then thrust a peeled stick into the bread; if it comes out doughy, replace the oven and heap on more ashes; if, on the other hand, the rod comes out clean, your loaf is cooked, and if due skill has been exercised in its manufacture, 'you may bet your bottom dollar,' as the Yankees say, that it will bear comparison with bread Doctor Daughlish or 'any other man' can turn out from his bakery. I have seen capital ovens made at the Hudson's Bay Company's trading posts—fixtures, be it remembered—by covering an empty pork cask with thick clay, and then continuing a fire in the cask until its staves burn away and the clay hardens like brick on the iron hoops; indeed, there are numerous ways of baking in a permanent camp or station, none of which are available for travelling.

CHAPTER IX.

What to wear—Avoid Leather—Woollen Fabrics preferable to all others—Boots—Mocassins—How to manage with Snow-shoes—Hat—Mosquito-bag—Fishing Gear—A good day's Sport.

WHAT to wear is a matter of detail dependent, in a great measure, on the tastes of the individual. Most of us have some fashion of our own, and even in the very wilderness trappers, hunters, and fur-traders assume certain type patterns for hunting shirts and 'pants,' which are considered 'the right thing,' and are valued and worn by each in his respective calling, as 'scarlet' and 'silk,' in this country characterise and represent the field and the course.

Leather, or as it is commonly styled 'buckskin,' deer's hide dressed by Indian women into a soft pliable leather, is the material most hunters, trappers, and traders, whether white or red men, use for their suits of clothes; a red serge shirt next the skin, if such a luxury is procurable, adds very materially to the warmth and comfort of the wearer. The usual pattern in use is that of an ordinary shirt, for the jackets or 'hunting shirts,' and the 'pants' are made similar to those usually

worn in civilised lands. Both trousers and jacket are always elaborately fringed; long strips of leather are sewn round the collar so as to hang over the back; dangling also from the shoulders to the wrists are other fringes, and down the entire length of the legs ornamenting the outer seam. Sometimes bead-work and stained porcupine quills are used to increase the ornamentation. This style of dress is decidedly showy and picturesque, and having said so much of it, I have exhausted everything that it is possible to say in its praise. I know of no good quality belonging to a leather hunting suit; but such as are objectionable I could multiply *ad infinitum*. It is disagreeably heavy, without supplying an equivalent of warmth. Assuming the character of tripe or a damp chamois leather when saturated with wet, it becomes, when in that state, cold, clammy, and uncomfortable beyond description.

Then when you have succeeded in drying the suit, a work of time even if aided by the sun or the camp-fire or both, you have to robe yourself in garments much like a light armour of lanthorn-horn; your 'pants' in all probability will have receded into the breeches pattern, and the sleeves of your jacket have modestly retired to the region of the elbow. I care not how much tugging and stretching you may bestow on your wet suit of leather, shrink it will though you do your 'darndest' to prevent it; not only that, but it shrinks (without being wetted externally) day after day from perspiration. One

observes his 'pants' are creeping steadily away from off the insteps; as the tide during its ebb leaves rock after rock exposed, so the leather steals away from the hands and feet, gradually uncovering at first wrists and ankles, then arms and legs; and if some curative means were not resorted to, I verily believe the pants would become like to those worn by acrobats and tight-rope dancers, and the jacket sleeves dwindle into mere armlets, such as ladies wear when in evening dress. If nothing better can be obtained, there is no other course left open than that of wearing leather or going *à la sauvage*, 'sans' everything. But adopt my advice, and never wear leather if you can help it; take out with you two suits of clothes, made of the best Scotch tweed you can procure. My remarks, be it understood, only apply to bush life—visiting, or doing the swell *en route*, is altogether another affair, with which I have nothing to do. I have tried all kinds of material for roughing it in, and the result of my experience is entirely in favour of Scotch tweed. I am quite convinced a thoroughly well-made piece of tweed will stand more wear and wet than any other fabric produced from wool.

The Canadian 'blanket-coats,' so commonly worn during the winter in Canada, are admirable in a dry frosty atmosphere, but white, except on snow, would be fatal to any success in hunting; and further, their shape is inconvenient, and the material out of which they are made is easily torn, and holds water like a sponge. The

colour I prefer is dark grey; the waistcoat and jacket should have as many pockets as the tailor can find room for, and on each shoulder a piece of glazed leather should be stitched, to prevent the gun from rubbing a hole in the tweed. Flannel shirts and thick worsted socks will be found to answer better than linen, only do not encumber yourself with too large a stock. Indeed I should never think of taking any article of clothing with me except it was fabricated from the best wool, and of the choicest quality money could purchase. I despise fur and leather garments, and strongly recommend all 'wanderers' never to use either if they can help it.

Boots are indispensable; 'mocassins' are all very well for Indians, who have feet harder than sole leather, and to whom socks or stockings are unknown articles of clothing. You may 'sole a mocassin' with a piece of green hide, keeping the hair outwards, and in that way contrive to walk with a moderate amount of ease until the hair rubs off, which it is pretty sure to do in a few hours, especially if the ground should be wet; the hair removed, the hide becomes slippery as glass, rendering progression under any circumstances extremely difficult. Indians have shorter toes than white men, and from continued practice the great toe in particular acquires a kind of holding power, which enables a savage shod with 'skin-shoes' or mocassins to ascend steep slopes and climb craggy mountains, with greater ease and celerity

than any white man, however well trained to hill-climbing, could accomplish with nailed boots on his feet. Hence persons are disposed to imagine mocassins must be the better foot armature, because they only observe the facility with which 'Red men' walk and climb in them, without taking into consideration the all-important difference in the structure of the foot. Reduce it, however, to the test of experience, and you will soon discover that your feet shod with mocassins become sore, your ankles strained, and the joint of your great toe so stiff that walking grows positively painful if not impossible. Hence I always provide myself before leaving England with a few pairs of strong nailed boots of the pattern known as 'ankle-jacks,' made wide in the sole and laced up in front, and do not resort to mocassins until my boots are worn out and there is no means of replacing them.

In winter, however, when travelling with 'dog sleighs' and walking on 'snow-shoes,' the mocassin is the only form of shoe practically useful; to wear boots during intense cold is to risk 'frost bite,' and not unlikely the loss of your toes. The better plan for protecting the feet against frost is to dispense with socks altogether. I make a small bag of thick blanket, for putting over my toes—it should reach only to the middle of the foot; then I have four long blanket bandages, with which I regularly enwrap my foot and ankle, so high up as the calf of the leg. Over these layers of

flannel I put a large mocassin made from moose-hide, tie it firmly, and lastly, bind the leg of the trouser securely over all. The feet thus protected are safe from any effect of cold, and wet never penetrates through the thick bandaging even after a long day's march through soft snow. When camping just dry the outer bandages and mocassins, and you are all right to begin another tramp.

A wide-brimmed felt hat, soft and pliable, I prefer to any other kind of head covering. It shades you from the glare of the sun when shooting, prevents the rain from running down your back, accommodates itself to any amount of folding and squeezing, and will be found an immense comfort when 'camping out' to sleep in. I pass an old handkerchief or 'comforter' over the poll of the hat, and then tie it under my chin, bringing the two sides of the brim of the hat over my ears. This plan prevents the head from galling, keeps the ears and throat beautifully warm, and is quite as serviceable as a canvas covering or umbrella in shielding one from dew and rain. The brim being wide, it will also add materially to your comfort in 'mosquito time,' by keeping the gauze net which covers the head, face, and neck well away from the nose, mouth, and eyes, thus facilitating breathing and seeing. A gauze bag to cover the head and face, without which I do not hesitate to say a man could not long exist where mosquitoes are so plentiful as we found them to be on the Fraser

River and Sumass prairie, should be worn at all times twisted round the hat during summer, because one is never sure of not falling, when least expected, among mosquitoes and sand flies.

The choice of 'fishing gear' may, perhaps, be worthy of a few hints, although we are all more or less wedded to some pet system of 'how to hook 'em.' I will, however, briefly give my own plan, and leave it an open question for other 'wanderers' either to profit by it or to follow their own particular hobby, whichever may be the more congenial to their taste. In any 'possible sack' I carry a few hooks of different sizes, gut, silk, a little gold and silver thread, a dab of 'cobbler's wax,' and a coil of strong line, such as we usually employ for salmon fishing. For obtaining all the other requisites for fly-making I trust to chance. Feathers for making hackles and wings I have always found to be readily procurable from the birds frequenting the district travelled through; fur for dubbing, the small rodents supply.

The best trout fishing I ever enjoyed was obtained whilst we were marking the Boundary-line along the eastern slopes of the cascades and western slopes of the Rocky Mountains. I observed whilst sitting on the banks of a stream a trout jump at a fly that had fallen into the water. Immediately I overhauled my stock of materials, selected thread, hooks, &c., knocked over a ruffed grouse, made wings from its frill feathers, and a

hackle from the tail coverts ; picked out some red wool from my shirt, tied all the lot together into what I called a 'fly,' which no more resembled an insect than it did a hippopotamus, fastened it to a piece of fishing line, and the line to the end of a young larch-tree. Thus equipped, I flogged away at the water as though I had been whipping a horse, but nevertheless with the most unquestionable success : the trout rose readily at my monster, and seizing it, disappeared with the enjoyable sort of bubbling splash that anglers know so well indicates feeding and not play. It must suffice to say that this rude imitation and yet ruder rod was pre-eminently successful, and what more could one say of the best finished salmon rod, wynch, line, flies, and cast, that money could procure ? I never hamper myself with a fishing rod, but just cut the best stick I can find, and trust to strength of tackle rather than to skill in playing a heavy fish in order to land it. If you do not know how to 'tie a flie,' in that case it may perhaps be advisable to take a small assortment of ready-made ones with you ; but it is better to learn how to make artificial flies than to bother yourself with articles that in nine cases out of ten you never have at hand when you require to use them. I have deemed it superfluous to append any instructions for the making artificial flies, inasmuch as books innumerable can be obtained, wherein every minutiae is clearly explained and illustrated. The result of my own experience is, however, that six

practical lessons, imparted by a master in the art of 'fly making,' will aid a novice more than will the perusal of an entire volume, together with a patient following out of the instructions given for 'tying up a fly.'

I invariably wear my line and flies tied round my hat, with a plain hook or two simply 'whipped' on to strong gut—for using live bait if need be, hooked into the felt. Arriving at a likely-looking stream, cutting a stick, and tying the line to the end of it, is all the delay required to commence. Sport or no sport, unfastening the line, winding it round your hat, and pitching away the stick, will not occupy more than five minutes' time at the finish. A good plan for carrying fish, in the absence of anything better, is to cut a long twig with a crook at the end, and pass the point under the gill cover of the fish and out at its mouth, then push it down to the crook, which prevents it from slipping off; thus string up fish after fish until your stick is filled. To sum up, I say dispense with rod, wynch, fishing-book, together with a host of flies, and artificial bait, whenever you are far away from the streams of civilisation. That fish in rivers very much fished grow shy, and hence require great skill and the most delicate tackle to catch them, all anglers well know; but this in no wise applies to waters and the fish tenanted them in 'wild countries.' The unsophisticated natures of such fish are not familiar with

the wiles and lures craftily prepared by disciples of the 'gentle art,' so they do not hesitate to seize upon anything offered to them, however widely it may differ in appearance from every known form of insect life.

What description of gun is best suited for 'hunting purposes' is a question more easily asked than answered, and must have a chapter to itself.

CHAPTER X.

Firearms—Muzzle-loaders — Breech-loaders — Rifles — Revolvers —
Shot-belt *versus* Pouch—The better Plan for cleaning Guns.

It would serve no useful purpose, nor in any way aid you in the choice of firearms, were I to attempt a dissertation on the respective merits of breech and muzzle loaders, or rifle *versus* shot gun. 'A man who gives in against his will remains the same opinion still,' says the adage, and true enough it is too. Few sportsmen nowadays would say very much, if anything at all, in praise of the poor discarded muzzle-loader. It has had its time, like stage coachmen, comfortable, homely roadside inns, with the smiling landlady, rosy barmaid, civil waiter, and 'good accommodation for man and horse.' I am not sure whether I do not even now prefer those old times to the present. I do not care about fashionable places, and particularly dislike large hotels; and somehow have an instinctive dread of getting into the clutches of landladies and lodging-house keepers, who wear rustling silk dresses, and 'sail' about rather than walk as ordinary women; if by any mischance I am driven to seek shelter in a monster inn or

gorgeous first-floor front, I make up my mind to bear and to suffer, and to leave, if not a wiser certainly a poorer man.

Give me an old-fashioned road-side inn for comfort and quietude. What do I want more, so that I get my meals with a decent amount of regularity, and that they are good of their kind. No reasonable person would desire to be hoisted up to his bedroom by machinery, as if he were a trunk or a bale of goods; or prefer to be waited on—or, rather, kept waiting—by an army of pale-faced men clad in seedy black and very loose shoes (I often wonder where waiters at hotels get their shoes), to having wholesome food served by a smart maid-of-all work, and a bedroom only a single story high; if there be such an one, he had better go to fashionable places where hotels are to be found, conducted on the un-limited liability system, ‘combining,’ I quote from an advertisement, ‘the convenience of a hotel with all the comforts of a home.’

The operation of quietly putting in my powder and shot, and listening to the screech and weeze of the wad as it glides down the barrel, pressed on by the sturdy ramrod, whilst surveying my dogs crouching closely and waiting in panting anxiety for the ‘hold up’ and ‘seek dead,’ affords me more substantial pleasure than does the rapid loading and firing of the new and improved breech-loading shot guns. After all, this is only a matter of opinion. I have never tried a breech-loading

shot gun when away on a long hunting expedition, hence I am not able to state from experience how such a gun would answer, exposed as it necessarily must be to the effects of wet, the grinding power of sand and dirt in the hinge or hinges, and the continued rough usage a gun invariably suffers when one is riding all day long, and sleeping at night in the open air. No opinion is worth a straw on this matter except it be deduced from the results of actual experience extending over a long period of time. A breech-loader may be fitted to stand wear and tear quite as well as a muzzle-loader, for anything I can say to the contrary, and it may be found from experiment that cartridges can be quite as conveniently carried, and replaced when exhausted, as shot powder and caps can be conveyed in the ordinary fashion. But until I am convinced either by the experience of others, or by practically testing the virtues of the breech-loader myself, when far removed from the aid of a gunsmith and for a period of time extending over not less than two years, that the modern breech-loading double-shot gun possesses all the advantages that the muzzle-loader has, added to greater facility in charging and discharging, I shall be chary how I trust to a breech-loader only, if I start again on a hunting expedition to an uncivilised country.

Call it prejudice if you like, obstinacy, or a stupid adherence to old ways and customs, simply because

one has been used to them, nevertheless if you beat me by argument, I am after all only a verification of the adage just quoted. For real forest and prairie life I have thoroughly tested the muzzle-loader's powers of endurance and extreme usefulness for nearly every purpose a hunter can require a gun.

Except for unusually heavy wild beasts, I contend a short gun is more useful than a rifle; long ranges are seldom, I may say never, required, and for any distance within eighty yards a good muzzle-loading shot-gun will carry a bullet as true as a rifle, and with a force of penetration quite equal to breaking the ribs of a bull-buffalo, or those of the much-dreaded grizzly-bear, and what more can you desire? Then ducks, geese, grouse, and other feathered game add very materially to the comforts of the mess, to say nothing of the lesser furry tenants of both forest and open land. A load of shot I always find is much better and far surer than a bullet in obtaining these pleasant additions to the stock-pot. It is quite as well to carry a rifle with you, if you have the means of transport at your disposal; but if it rested on choice, whether the shot-gun or the rifle should be taken, one of the two to be left behind, in that case I should not hesitate a moment; the rifle would be abandoned without a twinge of regret, for I know the other is equal to every need. Let it be distinctly understood that my remarks in no way apply to jungle shooting in India, Africa, or

elsewhere. The practical hints I offer are not intended to assist sportsmen and hunters who wage war upon lions, tigers, elephants, rhinosceri, together with other leviathans of the plains and forests. Hence I have purposely avoided alluding to any particular form of rifle or projectile, or to travelling with camels or elephants.

Natives only understand the management and tempers of these half-reasoning capricious beasts, and every information the most practised camel or elephant traveller could impart would be of no good whatever to a white man, because he could never turn such knowledge to a profitable account. Moreover, countries wherein camels, elephants, and dromedaries are found so useful, with an exception or two—are unsuited to European colonisation, and with such we have nothing to do.

To the wanderer in search of an eligible home in the wilderness, such information would prove of no possible service. My own equipment when I leave England for America, North and South, consists of one good strong double-barrelled muzzle-loader, No. 12 bore, a Purdy's rifle to carry an ounce bullet, and a Colt's revolver; two large-sized powder flasks, covered with thick pig-skin, and provided with several metal loops for slinging or fastening it to your buttons or waist-belt.

Another of my old fashions is to prefer the double shot-belt, made of good leather, and provided with brass chargers which fasten in with a spring. These

chargers are liable to get lost if they be not secured to the belt by small brass chains. I fancy shot carried across the shoulders in a belt never wearies one so much as it does when dangling in a pouch, suspended by a narrow leather strap. More than this, having two sizes of shot is a great convenience; I usually take duck-shot in one side, and No. 6 or 8 in the other. A third reason for giving the preference to the old pattern-charger is, that you see what you pour into your barrel, whereas a man loading in a hurry, or under the influence of intense excitement, often (I say often, because I have done it myself many times, and have witnessed the like mishap befall others) pushes the end of the patent 'spring-charger,' usually affixed to all shot-pouches, into the end of the barrel, presses down the spring, which is *supposed* at the same time to shut off the main supply and let out the charge of shot desired; then down goes his wad, and if he does not happen to notice his ramrod he by-and-by fires, fondly imagining he had put a charge of shot into his gun. This is no imaginary case, as any person who has had a great deal of shooting will know. The shot very often jams in some way, and does not run from out the charger, an accident you are exceedingly likely to overlook if your attention is directed to some other object when loading. By using the old pattern charger this can never happen; if it does take a trifle more time to load than it would if the 'patent charger' were used, you have

the satisfaction of knowing to a certainty that the shot is in the barrel, and the right quantity too.

In addition to shot, I usually carry a few bullets in my pocket, and a wire cartridge or two, if I am fortunate enough to possess any. A word or two more, and I have said all I deem needful about firearms. The pea or small-bore American rifle I do not like; the only advantage it can have over a large bore is that a much less weight of lead is carried by the hunter. I do not think the enormous thickness of the barrel supplies any material advantage, or gives greater accuracy to the course of the bullet, neither have I seen any of those wonderful feats performed by trappers and hunters with the pea rifle, such as one reads of in all stories about American or Texan life. My own opinion is, that where one of these marvellous 'leather-stockings' shoots ordinarily well a dozen of them shoot badly, and miss as often as other persons. For cleaning firearms let me strongly recommend spirits of turpentine, in preference to oil or grease of any kind. I never use water, but content myself by wiping out my gun well with a hemp wad, saturated with spirits of turpentine. It at once removes all the powder and 'leading,' prevents rust, and does away with any chance of damp remaining, which it will do, even in spite of every precaution after washing out a gun with water. The better plan for carrying turpentine is to have a glass-stoppered bottle fitted into a

wooden case. I am quite convinced that any person who once tries turpentine for gun-cleaning will discard water and oil for ever after.

It is a wise precaution to have with you in reserve a pair or two of spare mainsprings, at least two sets of ramrod fittings, and not less than three pairs of nipples; the latter I prefer 'inverted,' and bouched with platinum. Experience has clearly proved to my mind that with inverted nipples there is not nearly so great a liability to miss-fires from damp, neither are you annoyed with a small column of smoke curling up from each nipple when you fire. Further than this, I find the ordinary shaped nipple rapidly wears, and the hole soon becomes sufficiently large to admit of an escape of gas sufficient to blow the hammer back to half-cock—a mishap very likely to break a mainspring. I have never known this to occur when the inverted pattern was employed, hence I invariably use them. During the Commission I can safely say, for four years I fired my double-shot gun on an average a great many times every day, carried it on horse and mule-back, and also used it constantly in boat-shooting, but with the exception of replacing the nipples occasionally, and the loss of a ramrod or two, it was never once damaged or disabled. A breech-loader might have done as well, but I cannot quite admit it as an established fact until I have better evidence adduced than I am in possession of at present.

If you use a gun-case, by all means have it made of strong leather, such as trunks are constructed of; wooden cases or such as are covered with black enamelled cloth or painted canvas are not worth a single snap for conveyance on mule back; the least neglect or carelessness on the part of the packer in placing your gun-case upon the load may be fatal to it in a moment. I have more than once seen a mahogany gun-case, although incased in a leather cover, broken by a sudden haul at the 'riata' into fragments.

It is of no use trusting to a gunmaker to get a case made for you. Go yourself to a respectable trunkmaker, show him the pattern you desire and approve, and tell him to manufacture you a case of the stoutest and best leather he can procure. Then you will be most likely to obtain an article which will last until your return at least, and probably through many another scramble by flood and field. To offer any further advice relative to rifles, or to attempt a description of the various kinds of projectiles at present in use, would be worse than ridiculous in these narrow limits, when large volumes have been written and published on the subject. Every sportsman is sure to have his pet hobby, both as regards rifles, shot-guns, and projectiles; I, too, have mine. Let then each one ride his own hobby, and, brother wanderers, we shall do well not to ride against or try to unhorse one another.

CHAPTER XI.

Packing the Train for a start—Driving in—Haltering—Putting on the Aparejos and 'Saddling up'—Synching—Packing on the Load—The way to pack Barrels—Slinging—Roping and Covering—Throwing the Riata and fastening it—Our March—The abandoned Camp—Entering the Timber—'Stringing out' and Counting—Mules apt to lie down if halted.

WE must now assume that the tents are struck and packed; that the equipment we have been gathering together is piled in properly adjusted loads in a straight line, each load being laid on a 'riata' stretched full length upon the ground; that the aparejos are arranged in a crescent shape, and that the packers are away in search of the bell-mare and her family of mules. Whether a hundred mules are to be packed, or five only, exactly the same routine is to be observed. We hear the distant tinkle, tinkle, of the bell, and presently trotting from out the timber or scampering and playing over the grassy prairie come the mules. Some follow, others precede the bell, but none of them are allowed to stray far away, for the packers know what crafty animals mules invariably are, and that some of the band, usually old stagers, have an ugly habit of slipping unobserved in amongst the trees, there to skulk and hide until hunger

or thirst compels them to show themselves. I have very frequently been delayed an entire day in consequence of a mule or two being allowed to stray from the band whilst being driven in. On reaching the aparejos the bell-mare is first made fast to the end aparejo on the extreme right, then two or more packers (dependent on the number of mules constituting the train) stand in the hollow of the crescent with a number of halters hanging on their left arms; other packers drive the mules up to be haltered by the men who are waiting for the animals to push their heads over the breastwork of aparejos.

Each mule, as soon as the halter is on its head, is tied with a *bow* knot to its neighbour, the one next the bell being fastened to the mare. Except this plan of haltering is adopted, I do not believe a train of fifty mules could be caught singly and haltered in a day; and to venture behind a pack mule, or to creep up by its side to put a halter on, is to risk getting a taste of hoof not likely to be readily forgotten, but the aparejo being betwixt the man and the mule, prevents the latter from striking or kicking. If all the halters are used, of course every mule is present; if there are spare halters, then nothing further can be done until the absentees are discovered and brought in.

All present, then the first thing the packers do is to select the riding mules from out the band all haltered together, then each man saddles his own animal, and makes it fast to any available object near by. This

done, the head packer, or packmaster, takes his stand upon the centre of the baggage, so that he can look down on the 'caronas' (you will remember what I told you was the use of the carona), and guided by the pattern, he directs the two packers to take the mule they have unfastened to its own aparejo. It will suffice to confine our remarks to the saddling and packing of one mule. The mule, led up to its aparejo, is first blinded with the 'tapujo,' which is slipped deftly over its ears;* then a packer goes on each side and examines the mule's back, and combs out all the sand, dirt, or matted hair, with a currycomb—a precautionary measure which I would impress upon your mind it is essential to look well after, if you wish to avoid sore backs. Packers skulk doing it, unless your own or the packmaster's eye is overlooking them.

This finished, one packer takes up the aparejo, whilst the other adjusts the cloths, first sweat-cloth, then blankets, lastly corona. There is a right and wrong way to take hold of an aparejo; it must be grasped by the two angles, at the upper or that part of it where the cushions are joined, lifted well above the mule's back, and then allowed to drop on the cloths. When on, the off-side man pushes it towards the mule's tail, whilst the near-side man, standing well away from the mule, lifts the crupper, pushes his arm under it, seizes the

* *Vide* illustration, page 79.

mule's tail, and quickly slips the crupper beneath it. This is nearly always a service of danger, demanding much care and caution, especially if a mule is suffering from a chafed tail. The aparejo is next pushed back into its proper place, care being taken that there are no folds in the cloths—the synch * is lastly placed on the aparejo by the near-side man, the off-sider passing the end back to his comrade under the mule's belly; and the latter then passes the leather strap three or four times through the synch ring (as previously described when speaking of saddles), and hauls away, the off-sider taking care that the aparejo does not get pulled on one side.

Near-sider having hauled the synch as tight as his strength will admit of, a novice would begin to fancy the mule's ribs must be broken, or its stomach so compressed that nothing could pass through it if greater pressure was made. Not a bit of it, the packers have not nearly done; round comes offsider, and they jointly lay hold of the leather strap, and placing each a foot against the mule to increase the purchase, pull away until the mule resembles a wasp, or as a lady would look who was given to tight-lacing, if we could suppose her to be converted into a quadruped. It seems a cruel proceeding, nevertheless it does not hurt the mules, precludes any chance of the load shifting, and prevents galls, which are sure to accrue if the aparejo

* *Vide* cut, page 76.

rocks about. The synch made fast, the blind is removed, and the mule tied with its halter to the load we are going to pack upon its back, a proceeding never commenced until all the mules are 'saddled up.'

Some of the more refractory mules are turned loose at first, because they kick, plunge, and throw themselves on the ground with such determined violence that tying them up would endanger the safety of the other mules. 'Saddling up' completed, we begin to pack; and, let me tell you, to pack a mule as it ought to be packed, requires an amount of skill and practice not to be easily acquired. Blinding is the first proceeding, next a packer stands on each side of the mule, and the near-side man doubles the sling rope and lays it across the aparejo, the loop towards the off-side. Each packer now takes up a package, selecting two as nearly equal in weight as it is possible to get them; should one alone be heavy, and all the rest light, lighter packages must be tied together so as to counterpoise the heavier one. The two men lift each one his package at the same time, then they rest it against the aparejo, and support it with the shoulder whilst adjusting the sling-rope; the off-side man flings the loop of the sling-rope to the near-side one, whose duty it is to pass one end of the rope through the loop, and then to tie the two ends together with a bow-knot. Much care is needed to sling the two packages the proper height; if too low, the load, to employ a packer's expression, 'swaggles,' or, in other words,

sways about ; if too high, it will be very likely to 'topple' over, either in ascending or descending a steep hill-side. The grand secret, however, consists in getting the weight of the two packages first swung, to rest on the arch of the mule's ribs ; a second's reflection will make it plain to any one that if the sling-rope is tied too long the weight will in a great measure hang from the rope, and as a matter of course bear directly on the backbone of the mule, but if the rope is knotted to the proper length, then the weight comes on the convexity of the ribs, thus relieving the back and taking all undue strain from off the rope.

When barrels are packed a different arrangement of the sling-rope is required ; the rope must be longer than that ordinarily used, and be doubled four times instead of twice. By right, a barrel ought not to weigh more than 150 lbs., two of these make a fair load for a sturdy mule. We had an immense number of barrels to convey during the Boundary Commission transport, containing ration beef and pork ; and I would strongly advise any persons who may perchance be engaged in similar field-work, never to purchase ration meat, except packed in 100 lb. casks. Add to the 100 lbs. of meat the weight of the brine and cask, and it will be found that two of these packages are quite as much as a mule ought to carry, if you desire to keep him in good condition. We found from experience that two 150 lb. casks were too heavy (i. e. containing 150 lbs. of meat exclusive of brine and

cask) for the mules, and it was more than most of our packers could do to lift one of them on to the aparejo, and keep it there whilst the sling-rope was being adjusted. Packing a single cask on the centre of a mule's back, a plan I have frequently seen adopted when two casks were found to be an overload, is a most reprehensible practice, and one I should advise any owner of mules never to permit; the mule must necessarily carry its load in pain, and the least slip may produce a cricked-back, a mishap that renders a mule utterly useless for ever after.

The first two packages we have properly slung, and these form, so to speak, the foundation on which the superstructure, consisting of the odds and ends, which make up the load, is to be built. This performance needs only a little management in order to keep the weight cleverly balanced. Over all, the packers now throw a painted canvas cover or 'tarpaulin,' which is for the purpose of keeping the load dry in case of rain. If you do not look sharply after the packers they will invariably put this cover under the aparejo rather than over the load; the reason they give, if you ask them why they do it, is that there is no chance of rain. Never believe them, it is not the truth; 'roping' a load over a tarpaulin is rather more trouble, hence they would rather save themselves extra labour and indulge their own idleness than save your goods and chattels from getting saturated. I always adopt that good maxim with my

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tarpaulins that the wise Quaker did with his umbrella, I put them on when the sun shines, to be at all times in readiness for the storm; thunder-showers have a disagreeable habit of coming on when one least expects them, and should your tarpaulin be carefully stowed away underneath, instead of being spread over the baggage, the latter, as a matter of course, gets a soaking; what care the packers, so they get their evening ration? I know of few misfortunes more depressing to the spirits than to look on whilst your rations and camp equipment are being poured on as if Aquarius had capsized his watering-pot immediately over the mule train. To travesty an old conundrum, rain and clouds, when the baggage covers have been purposely stowed away, appear to affect a wanderer's hilarity as they do his goods, the sun, and his boots—they effectually take the shine out of all three.

The near-side man now 'throws the riata.' How to make this system of 'roping' on the load intelligible is somewhat a puzzling task; I am quite certain that watching the process is of no practical use. I have myself, when a novice, narrowly scanned every bend of the rope, as the ready-handed packers twisted it in mazy, incomprehensible turns, round, over, and under the load, and have amused myself by observing other novices alike uninitiated try the same expedient in order to learn the art of 'roping a load,' with a like unsuccessful result. You may keep sentry day after day for a fortnight, or



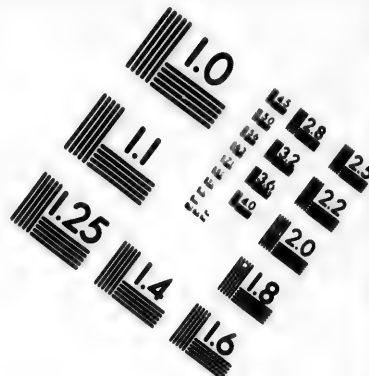
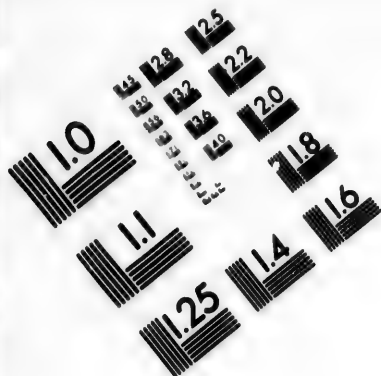
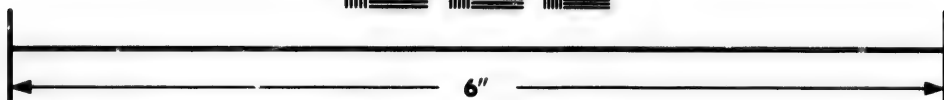
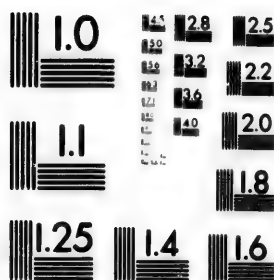


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longer if your patience holds out, and if some kind magi lent you the eyes of Argus, even with these added to your own, you would no more be able to adjust and tie a riata '*secundum artem*,' by simply seeing others do it, than you could learn to play a sonata of Beethoven's on the flute or violin, or rattle off difficult music at sight on a pianoforte, by watching the fingers of an accomplished musician. How much more then impossible appears the task of making this complicated affair comprehensible by description. I say complicated, but, after all, it only appears to be so because the way to do it is not understood. I could teach any person in half-an-hour with a rope, a chair for a mule, and an old trunk for luggage, but how I am to commence the lesson by writing it I no more know than I should know the way to picture the phosphorescence of a tropical sea, or describe the ever-varying scintillations of the aurora borealis. I wish some simple plan would suggest itself to extricate me from this difficulty; the puzzled reporter, who was suddenly called upon to describe a rocket, hastily wrote—'a flash, a bang, a stink, and it is all over;' what could he say more? But I am afraid what may answer as descriptive of fireworks will not be similarly efficacious in regard to 'riatas.' Well, all I can do is to try my best to make this roping problem understandable.

As the 'riata' lies on the ground, the near-side man takes hold of it, about 20 feet from the end of the rope,

with his right hand; with his left he gathers up the remainder in coils, the right-hand end is obviously double, because the slack end hangs loose; this double portion he throws over the load to the off-sider, who catches it, and quickly passes the loop back again under the mule's belly. Near-sider next passes the short end through the loop, brings it up against the aparejo, then twists the end three or four times round the rope to prevent it from slipping. The off-side man now hauls away upon the rope; mind it is double on his side, which is continuous with the long end. This process, you will clearly see, always supposing I am understood, tightens the rope encircling the load as would a circingle or the synch around the aparejo. As the off-side man hauls, the near-side gathers in the slackrope, and prevents it from running back; the whole secret is to pull this encircling rope as tight as it is practicable for human strength to accomplish. There is not the slightest additional pressure on the mule's belly, because the edges of the aparejo take all the strain, and keep the rope clear away from touching the animal—a fault I complain so much of in the cross-tree pack-saddle, as previously pointed out.

The near-side man, when everything is hauled tight, passes the longer end of the rope first under the foremost corner or angle of the aparejo, brings it along underneath the edge, then from under the hindmost angle, and along the edge of the aparejo to the centre of the

animal's back, or perhaps the centre of the load will be the better comprehended.* Here he passes it betwixt the double rope we have just been tightening, brings it out towards himself, or, in other words, towards the mule's tail, and gives it to the off-side man, who takes it down the edge of the aparejo, and follows precisely the same course with it under the angles and lower edge as did the near-sider, brings it up the front of the aparejo and passes it through the double rope, but brings it out towards the mule's head. Here the near-side man again takes it; now off-sider goes back and seizes the rope where it was passed over to him at first, at the hinder part of the load, and laying well back tugs at it with all his might and main. This done, the near-side man performs a similar feat with the end of the rope passed to him in front, makes it fast, and the packing is completed.

In this system of fastening, the double rope acts in the first place similar to a girth, and it is rendered immensely tight by the strain of the fore and hind purchase, brought to act upon it by the longer end of the riata, acting directly from the angles and lower edges of the aparejo (however tight the rope is hauled it can never in the smallest degree bear upon or injure the mule), and in the second place the double portion of rope is to some extent spread open by the strain upon its sides, and thus serves to maintain the built-

* *Vide* cut, packed mule, page 75.

up portion of the load the more firmly in its place. There is no knot or anything to untie that can by possibility draw tight, and thus hinder the packers when unloading, the fastening at the finish being only that of passing the end under the tightened portion of the riata.

Do not imagine that passing this long riata round and over the load, as I have endeavoured to describe it, is a slow and tedious process; not a bit of it. If skilful packers are at their work, the rope is caught up, whirled over to the near-sider, passed back under, hauled on and slipped betwixt the double part almost as rapidly as your eye can follow the nimble-handed packers. When the riata is finally fastened the blind is removed, and the loaded mule turned loose. As the above description applies with equal force to numbers as to a single animal, let us suppose the train to be all packed and ready for a start.

Our march shall not be along an even trail, because the system of 'working' a pack train can be better explained by assuming our course to skirt rugged hillsides, to wind along gorges and river valleys, where streams must be forded or swam by the mules, and the goods, men, and aparejos, crossed either by means of a canoe, raft, or temporary bridge, then to follow the trail as it twists in a serpentine manner up a craggy mountain side to reach a pass whereby we can cross its serried heights and safely descend its opposite slope. This is

no imaginary picture, but one we had to encounter often during the working season when employed in making the Boundary-line. All the difficulties enumerated might, and indeed I may truly say often did, occur in a single march, but they cease to be difficulties when the wanderer knows the right way to surmount them, and it must be a very steep mountain, swift torrent, and thick forest that a practised hand could not work a mule train over and through.

The cook, belonging to the pack-train, or some outsider attached to the party, has mounted the bell-mare, and slowly rides away after the packmaster, who has already preceded him; the tinkling bell grows fainter in the distance, the mules, one by one, in single file, march on after its sound; the packers are all mounted, and flourishing their blinds, or 'tapujos,' ride, after the manner of field-officers on a review day, up and down by the side of the slowly-moving train. Behind there is very little to be seen, save the smouldering heaps of ashes marking the whereabouts of the camp-fires, trodden grass, and wild flowers crushed, broken, and despoiled of all their native loveliness. Perhaps a prowling wolf or cayote may be visible, creeping stealthily from out the timber in hope of pilfering a bone or a discarded piece of meat from the whisky-jack (Canada jay), already in possession, whilst over-head soar vultures, impatiently waiting to pounce upon anything left behind suited to their filthy tastes.

As the bell-mare and her rider enter the timber and leave the open ground, on which we had our camp, the packmaster reins in his mule, and carefully counts the mules, as one after another they march past him; he never attempts to count the mules after they are packed until, as the packers' term is, 'they are strung out.' As he counts them, a second in command also reins up and takes the tally likewise. If, on comparing notes, the full number are present so much the better, if contrariwise some are missing, then never halt the train, but send one or two packers to discover and drive on the truants. It is a very bad plan ever to halt a mule train on the march unless to unpack for the purpose of camping or to cross a stream. When loaded mules are stopped they are apt to lie down directly they halt, and should the grass be long or the halting-spot be near or amidst timber and thick underbrush, mules when once down amongst it are most difficult to find, and if not discovered, the result will—at any rate very probably may—cost you a mule or two, and the loss of the loads added to it. The heavy weight, together with the pressure of the 'synch,' prevents a mule, if at all feeble or stiff, from getting on its legs after it has lain down, hence if the packers fail to discover them die they must, and I have very often been myself searching with a most skilled herder and finder of mules, close by the side of a mule which had lain down with its load, and yet we were neither of us able to see it until a grunt or a groan betrayed the

animal's hiding-place. For these reasons I make it a fixed rule when travelling never to halt a train after commencing my morning's start, unless, as I have previously said, a river has to be crossed which is too deep to ford, until camping time arrives, and the mule's work for the day is at an end.

During the operation of counting, the packmaster also takes particular note of every mule, judging from the evidences of pain exhibited by suffering mules, as already pointed out, whether the load is evenly balanced or if anything is galling, if the cruppers are too long or too short, if the ropes are tight, in a word if everything is ship-shape and as it ought to be. If he detects anything wrong that needs altering, two packers at a signal ride up, dismount, seize the mule pointed out by the halter, drop on the blind, and rapidly adjust whatever is out of the way, the mule loosed trots after the train, and falls in to the rearward place. We are entering on a narrow rocky trail, which leads along the face of a cliff, overlooking a stream surging on some two hundred feet below us.

CHAPTER XII.

Narrow Trails—Packmaster goes ahead of the Bell-mare—Mountain Passes—Bridge-making—Crossing Swamps—Dangerous Corners.

THE packmaster now goes on a head of the bell-mare, because it is quite impossible to turn back on these very narrow trails, often little better than mere ledges of rock. Hence it is essential to the safety of the train that there be no obstruction, to hinder or impede the steady progress of the mules; so the packmaster rides some distance in front to warn any mounted Indians, or perchance another pack-train, in time for them either to halt at the widest place discoverable, or get up on or into a siding.

The packers all ride up close to the bell, and still carefully watch each mule as it enters on the narrow trail, in order to make sure that the ropes and synches are tight, and that none of the loads have shifted. Then one by one the packers file in with the train, keeping a distance of five mules betwixt each other, one man bringing up the rear. By adopting this precaution the mules are prevented from halting, the danger of which in a narrow trail I have previously pointed out; more than this, anything slipping is at once seen and

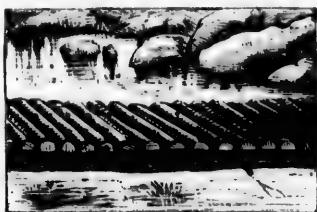
remedied. I may mention incidentally, that at one place west of the Cascade mountains, the provisions and camp equipments for a large detachment of men and several officers of the Boundary Commission had to be conveyed over a mountain with almost vertical slopes. One of the surveying officers pronounced it impossible to construct a trail up which a loaded mule would be able to walk. This place is named now the Diamond-tree Pass. One thing was clear enough—if the necessary materials could not be transported to the level ground beyond this pass, the work of marking the Boundary-line must be abandoned for a considerable distance. It of course fell to my lot to go and see the pass, and to decide the matter one way or another. It certainly was an awful place up which to make a trail that should be available for packed mules, and, to add to the difficulty, a good-sized stream of water tumbled rather than ran down the hill-side. The distance from the base to the summit in a straight line was not more than three-quarters of a mile, but it was rocky and densely timbered. The difficulty too was the more complicated, inasmuch as the prairie leading to the pass was intersected by several streams, not fordable, and two swamps that must be crossed.

I thought the matter carefully over, climbed up and down the hill, and recalling the words of Napoleon: '*Impossible, c'est le mot d'un fou,*' finally made up my mind to do it. By describing how this apparent im-

possibility was overcome, I shall give all the practical hints relating to trail-making, bridge-building, and fording swamps, which a wanderer can require, after which we will resume our march where we left off. I selected a trail-party of ten men, packed up tents, provisions for fourteen days, axes, augers, picks, shovels, and plenty of spare rope, and camped on the bank of the first stream too deep to be forded, in order to bridge it. There are many ways of making a bridge over which mules can pass with their loads. If it happens that large trees grow on the bank of the stream to be bridged, then all you have to do is to look out for one that leans towards the water, and which is of sufficient length to reach from side to side. Put the axeman to work, or do it yourself if single-handed, always remembering to make the first notch very wide, and facing the water. If the tree-top does not break in falling, your bridge, when the tree lies across the stream, is half made.

The next thing to do is to walk along on the fallen tree and axe off all the branches, which fall into the river and are washed away. Now look out for a clump of young fir or cotton-wood trees, that in size run each about four inches in diameter, chop down a good lot of them, trim and get them to the fallen tree, where they must be axed into regular lengths (the length of these pieces will in some degree depend upon the girth of the fallen tree), but as a rule from twelve to fourteen feet

for each piece will be found to answer every purpose. From the centre of each length take off a good-sized chip with the axe, and bore two holes through the place you have chipped with a three-inch auger. So far so good. Cast round now for a dead pine-tree, with its wood sound in the grain ; failing this, take a living one, and chop off a log three feet long, split it as I have before told you how, first into two, then into smaller sections ; round these with the axe, and you have your 'trenails' made in no time. Lastly, begin to work on the end of the tree nearest to you by first laying transversely on the tree, at its extreme end, one of the lengths you have chipped and bored. Put the auger again through the hole, and bore well down into the substance of the tree, then drive home the trenail with



TREE-BRIDGE.

the axehead as hard as you can ; adopt the same course with hole No. 2, this cross-piece is then completed ; in like manner lay cross-piece after cross-piece until you reach the other side of the stream. No

side rail is requisite to bridges of this primitive construction. I have worked our mule trains over the most fearful chasms on these tree-bridges ; mules never hesitate to cross on them ; and I need hardly say, with a party of men skilled in and accustomed to the work, a bridge is made on this plan in a very short space of

time. But the stream we have to cross on the prairie has no timber near it, excepting a belt of cotton-wood trees (*Populus tremuloides*), and thus we are compelled to resort to another scheme. We will suppose ourselves to have measured or estimated the width of the stream—say it is one hundred feet, found its depth with a plumb-line, and calculated the force of the current. The next proceeding is to examine the timber nearest the place to be bridged. A person's judgment must in a great degree guide him as to the necessary strength of the poles intended for 'stringers,' or side poles to support the cross-pieces. If the poles available are of fair size, say from ten inches to a foot in diameter, they can be used of a good length; if smaller, the lengths must be lessened. Having made this mental estimate, you begin to construct two or three 'cradles;' the number will be dependent on the poles, whether long or short; the longer the 'stringers' the fewer cradles are needed.

These so-called 'cradles' are rough square baskets, made by trenailing poles together, the size being regulated in accordance with the strength of the current; if swift, very large cradles will be required. When these cradles are completed, cut down and trim four 'stringers,' and get both these and the cradles down to the stream; make fast a rope to one of the cradles, and if no tree is near drive a picket into the ground and fasten the rope to it. This is a necessary precaution. Once or twice I

have lost my 'cradle' in a swift current by neglecting it. Now launch the cradle, and when, by the aid of poles, you have guided it, as it floats to the spot where you intend to sink it (which should not be farther from the bank of the stream than a man can conveniently pitch stones, or shovel earth and shingle into it), fill it as fast as you can with stones, earth, or anything heavy—and let me impress upon young wanderers how necessary it is to think of trifling details if they intend to bridge a stream as we are now doing it. Make sure, before you select a spot to camp on, that shingle or stones, or both, are within easy reach.

Well, we have sunk our cradle No. 1, and having taken care to make it sufficiently capacious to hold rubble, the weight of which is equal to resisting the force of the current, we lay two 'stringers' side by side from the bank to the cradle. You can now walk over them to reach the latter; next, see that all is safe and the cradle firm; if you are working with a party of men, the one who is on the cradle need not return to the shore. Separate the stringers about six feet from each other, trenail the ends securely to the cradle, and fasten those on the land by driving in strong stakes on either side of them. This done, trenail cross-pieces to the stringers as close together as you can place them; split poles answer best, the convex side uppermost; mules do not slip on them. Now you can work from the shore to cradle No. 1, and proceed exactly in the same way with cradles No. 2 and 3, if it need so many.

These two systems of bridge-making I have found to answer every useful purpose. Whenever streams are too wide and too swift of current to render either of these plans practicable, then I always raft or take the baggage and men in canoes, and swim the mules. We have crossed over the first stream by our cradle bridge, and two more are similarly managed, and we reach the edge of the swamp, which is so soft that were a mule to venture to cross over to the opposite side, down beneath the mud and weeds it would most assuredly go, and be suffocated to a certainty. There is no going round it; the rocky hill prevents you on one side, and the river skirts it on the other; no, over it the mules have to go, and to enable them to do so we must 'cord' it. This is very easily accomplished if you know how. Poles about six or eight inches in diameter are first laid along upon the swampy ground six to eight feet apart, and trenailed firmly together at the ends, so as to form two continuous poles, so to speak, reaching from one side of the swamp to the other—I have often corded two and three miles of swamp in one place. Next cut cross-pieces rather more than seven feet long, so that the ends project beyond the poles on which they are to be laid; cut also a set of lighter poles than those laid on the swamp, but in number sufficient to be of equal length with the others. This done, place your cross-pieces on the under poles, close together, side by side, until you reach across the swamp; you can walk on

them then without risking 'miring' down. Now take the lighter set of poles and lay them on the others; by doing this you save the labour of trenailing each cross-piece, because the pieces are jammed between the upper and under poles; these being trenailed firmly together at short distances, keep the 'cord-trail as firm as a ladder; two or more smart hands will cord a long piece of swamp in a day. Over this cordway the mules walk as safely as if it were macademised road.

All the impediments which intervened betwixt the first stream and the pass I have to get over being surmounted, I make my camp at the base of the hill, and commence with some of my men to cut down the timber as I 'blaze' the way before them. All lines are marked through timber by 'blazing,' which has nothing to do with fire, be it known, but is of kindred meaning to the word *blazon* in heraldry, 'to set to show.' With a small belt-axe the person marking the route to be followed by others cuts out a fair-sized chip from the trees as he goes along, first on the right hand and then on the left; these marks being made into the white timber, are readily seen by contrast with the brown bark of the trees. My only chance is to 'zig-zag' the trail up the most accessible places; to accomplish this I have to cross and recross the stream seven times on small bridges. The timber cleared, I next take a digging party, and with picks and spades make a regular path about six feet wide, on an average; but at short

distances I also make platforms, if I may so term them, by digging away the hill-side and then shoring up the earth with fascines staked down—the use of these you will learn anon—also where the earth was loose and likely to give way, or where a jutting point of rock had to be rounded, there also I constructed artificial ground with fascines and poles covered with earth.

There was one place near the summit which well-nigh beat me. The rocks ran out to a sharp craggy point, below which was a precipice; by breaking away rock and adding earth, which was kept from slipping over by poles and bundles of wood, I made a path round the point, but it was fearfully dangerous, for if a mule by chance should strike its load against the jutting rock, the chances were a hundred to one it would be knocked over and killed. To obviate any risk I had ropes twisted together to make them of sufficient strength, and then securely fastened to a tree growing immediately over this point of rocks. To the loose end of the twisted ropes I had a wooden hook attached; the bridging was next done, and so far my work was complete. I tried a mule with nothing on it, at first; up it went all right; next I tried one with an aparejo only, with a similar success; then I began to breathe and hope, tried a light load and did it. Whilst I continued with the men making the trail along the level ground, at the summit of the hill, a messenger went back to the dépôt to report that the way was clear, and to order

on a loaded train. They came in due time over the bridges and across the 'corded' swamps to the foot of the pass, and now for failure or success. I knew getting up a train was a very different affair to driving a single mule with a light load. I had fifty loads to get over the pass, and I determined on working five mules only at a time. You will see as we get up the mountain that to have risked a greater number would have been fatal to my plans. The bell-mare I had led by a man whom I could trust to wait when needed and to go on slowly. I made each packer—I took four to the five mules—carry a bag of stones, and now we are off.

As the mules reach the platforms the bell-mare is halted; here they can rest, recover their wind, and furthermore afford the packers room to adjust the loads and tighten the ropes. By slow degrees we get safely along over the bridges and past the shelving rocks and ugly corners. You ask what I make the packers carry stones for? Why, to throw at the mules when they attempt to stop. Betwixt the platforms the men cannot get near enough to use a stick or the all-potent blind; hence stones are invaluable assistants, and I know from experience that stones are like policemen, you can never find one when you want it. As we near our dangerous corner I halt the mules on the platform nearest to it below, then muffle the bell to prevent the resting mules from hearing it, have the mare led round the corner, and make two packers, one before and one behind, bring

up a mule. I stand by in readiness, slip the hook under the 'riata,' and then let the mule run up to the mare, which is waiting, so as to allow the mule to reach her without any strain upon the rope. I have to keep the rope clear of the rock by a cross pole, then the mule passes the mare on the siding, is unhooked and is soon upon the level; so, one by one, I get the first five safely round, and with their loads they are on the summit. These are now unpacked and turned to feed, whilst the men and bell-mare go down for other five. In this way, save with one accident arising from carelessness—a mule rolled over at the corner and was killed—the fifty loads were got to the top, and as many more a fortnight later. I had just as difficult a task to bring all the camp gear down again, which I did on the day preceding Christmas-day, spending my Christmas-eve at the foot of the Diamond-tree pass. I have related this little bit of trail-engineering because I thought it the best plan for supplying such practical hints as I am desirous to impart for the benefit of younger wanderers. We resume our march, having crept safely along the narrow trail. A river four hundred yards wide is ahead of us; this we shall have to raft, and swim our mules across.

CHAPTER XIII.

How to cross Rivers—Swim Mules—Make Rafts, Canoes, and a Bull-Boat—The way to cross a River with your Horse, and to Raft your Gun, and Ammunition, without wetting them—Camping—Unsaddling—End of the March.

THE best plan I can think of to explain how a wide swift river must be crossed is to suppose our train to be descending the trail, leading over the rugged bluffs, which shut in the Snake River on either side. So steep and massive are the cliffs of basaltic rock on each side of this immense river that getting at the water, except at lateral valley junctions, or where tributary streams enter, is an utter impossibility; a distance of fifty miles and more will very often have to be travelled along its banks before one single drop of water is obtainable, and it is not stating more than the truth to say, that a traveller might perish from thirst on the banks of this river, and yet be in sight of water the whole time. The Snake River is a tributary to the Columbia, and where we are going to cross it the width is quite 400 yards. About a mile above the crossing the Pelouse River joins the Snake, and below the junction the mingled waters dash on with a terrific

velocity. Four times I have crossed this only available place on the river with a large pack train—once with 150 animals, so I shall state exactly how I managed the transport over the river. I may mention incidentally that a ferry bridge, which is worked on a wire rope, has been established at this crossing, and the speculating Yankee who built it charges the moderate sum of a dollar (4s. 2d.) per head for packed animals to cross on it.

For a width of rather more than a mile there is a break in the cliffs of basalt on each side of the stream, with a kind of shingly beach reaching from their bases to the water, and a tribe of Red men—the Pelouse Indians—have their encampment close to the junction of the two streams. I ride on ahead of my train, and bargain with the savages for so many canoes and men to work them. This is always a tedious job, because the Redskins try hard to get double the amount they pretty well know they deserve. A circle is formed; the pipe, without which nothing can be done, is lighted and smoked. I say pipe, because one does for all, and as it passes on from mouth to mouth each savage has his say, whilst the women, or squaws, stand round behind the squatting men, and chatter incomprehensibly. The plan I adopt is to show them what I mean to pay, be it in goods, tobacco, or what not, and stand firmly by my offer; as a rule, they seldom refuse to accept it. Depend upon it, the great element in successful bargaining with

savages is to exhibit what you intend to give them. Let Indians see anything they desire or think they can get, and there is scarcely any labour too hard for them, so they can obtain it; but generally speaking, Redskins hate work, and would not stir a single yard if you only promised a reward, and did not show it to them. The bargain concluded, the canoes are launched, and paddled down to where by this time the mules are being unpacked and unsaddled.

It is always better to swim the mules over the stream before the men, camp gear, and pack saddles are ferried in canoes. It gives the animals' hair time to dry before resaddling; for if the aparejos are synched on upon a wet back, sore places are generally the result. So we begin by swimming over the animals. Remember, the stream is four hundred yards wide, and swift as a *rapid*. A packer halters the bell-mare, takes the bell in his hand, and gets into one of the canoes, which has been paddled up stream as far as the rocks will permit; above this the mules could not get into the stream. This, I must again remind you, gives a mile distance clear of rocks on the opposite side. The other canoes are stationed further down, and form a line across the current of water. The mules are driven by the packers close to the mare, and as the canoe is paddled away from the shore, the man holds on to the halter and tows her after it, at the same time ringing the bell continuously with all his might. The poor mules see

their pet swimming away, and hear the tinkling of the bell gradually growing fainter ; behind and around them are the packers waving their dreaded blinds, and every now and again giving any mule endeavouring to escape a taste of its many thongs. At last, in sheer despair, in they dash, and a curious sight it is too, to watch a hundred mules swimming a wide stream. Nothing of each animal is visible excepting its long ears and its nose, and as they rapidly separate, the weaker going down stream, and the stronger making a better passage, a chorus is heard of the most discordant snorts imaginable, ranging from the wheezy treble of the old, through every variety of sounds, to the sharp, ringing, trumpet-like snort of the young and healthy.

The canoes down stream are now paddled at the mules that are swimming too much head down stream, in order to keep them towards the side whereon they are to land ; but as some mules swim with ease and rapidity, others slower, and others, again, very slowly, why it happens they get ashore at all sorts of distances down the bank. A good mule will swim the Snake River, and land only a quarter of mile lower down on the opposite side to that at which it entered the stream, others a half mile, but the greater part of them will drift a full mile in crossing four hundred yards of swift running water.

The bell is kept ringing, and as the mules land, the mare is led along the bank, so that those which have landed may follow her, and those swimming make

towards the spot where they hear the bell. It is not an unusual thing for a mule to sink ; I have seen it happen many times. After the mules are over, the aparejos are first crossed in the canoes, next the goods and chattels, and lastly the packers, who then commence to saddle up, pack, and start again. To sum up, when the 'wanderer' has to cross a wide, swift-running river, he should first carefully note the kind of landing-place the mules will have to encounter on reaching the opposite side. If the river is four hundred yards in width and the current swift, a mile of landing ground clear from all obstruction is requisite. If you attempt crossing with a shorter landing-place the probabilities are that you will drown a number of your animals. You must always calculate the chances of effecting a landing when swimming mules, by estimating by the width of the stream and force of the current how far the weaker mules and bad swimmers will probably be drifted ; shelving banks are always dangerous, and so is soft swampy ground. These remarks apply to a wide river, when canoes are obtainable from Indians ; but to cross narrower streams when they are not, with mules or by yourself on horseback, is altogether a different affair. If with mules, a raft or a canoe must be made, on which to ferry over the aparejos, men, and loads. If you are on horseback, you must swim with your horse, should the stream prove too deep to ford.

A raft is the easiest thing imaginable to make,

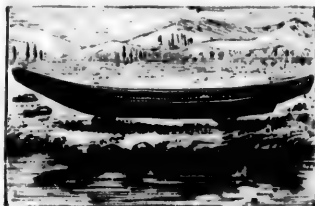
always supposing you can find timber dry enough to float, which in a timbered country even is not so easy as one would be disposed to imagine. The timber should be tried in the water carefully before making it into a raft. Ten by twelve feet is a very good size for a raft, and to make it, all that is needed is to lay three large logs, not less than six feet in circumference, side by side, about eighteen inches apart, then other three across these. The upper and under logs must be trenailed firmly together where they rest on each other, a light rail added on each side to prevent the goods from falling off, and the raft is ready to launch. Before doing this, if the stream is at all rapid, it is requisite to axe out a couple of rough paddles, and chop down three or four light poles to be put on board the raft. A coil of rope (the 'riatas' tied together answer every purpose) must also be taken on the raft, one end being either held or otherwise made fast to the place from whence you are to start.

These details completed, one man ventures on the raft after it is placed in the stream, and paddles with all his strength for the opposite side; the rope of course pays out as the raft is forced across. If he reaches the goal successfully, he makes fast the raft with a 'painter,' whilst he adjusts the long rope, about half of which, or enough to reach from the one side of the stream to the other, he ties fast to the raft, the end of the other part he also fastens to the raft, but at its

opposite end. He now leaves the raft, goes ashore, and pays out his part of the rope, whilst those on the side from which he came haul the raft back with their rope, and load it. Then a second man comes across, but he being greatly assisted by the first man pulling the rope does not run any risk of being washed down stream with the load, which he would do if he trusted only to the paddle or pole.

Another system can be resorted to as a last chance, and that is to stretch a 'buffalo robe,' or raw hide, over a wickerwork frame made of light sticks; this plan, which will do in case of an emergency, is called a bull-boat, so named because it is constructed from bullocks' hides. A one-hide boat is made by driving willows about one inch in diameter into the ground in the form of an oval; the loose ends are brought over tied and wattled together, so as to make a strong basket-work frame. Next bind a strong stick round the basket close to the ground, and make it fast by lashings to the willow rods; and over all throw a green hide or buffalo robe, and sew it fast to the encircling hoop. Now pull up your willows, turn over the frame, and you have as sound and perfect a coricle as ever was used by ancient Dane or Briton. A two-hide boat is made somewhat in the same way, only that a long pole must be first laid down as a keel. Supposing you arrive at a stream where there is no dry timber or other material fitting for rafting, then a canoe must be chopped out. Two

of our axemen could make a canoe, with axes only, in three hours, large enough to carry ten persons; the best timber is either cedar or white pine. The great art is to shape the sides of the canoe so that she will float evenly. I have often seen green hands make a canoe that, when launched, lay completely over on one side, and canted up either at the bow or stern. Nearly all the Indian tribes west of the Rocky Mountains own canoes, but the inland canoes, used on lakes and rivers, differ totally from such as are used by the coast and Fraser River Indians, and each tribe, whether inhabiting the mainland coast or Vancouver Island, has a fashion of canoe peculiar to itself. All the coast Indians use 'dug-outs' made from cedar. I have seen canoes at Fort Rupert that would carry thirty men easily in a heavy sea.

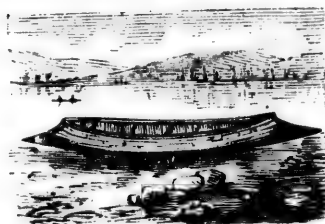


CEDAR CANOE.

Just think of the labour these savages must have bestowed upon each canoe, when they had nothing but rude stone tools to work with. They expand the sides by filling the canoe with water, and plunging red hot stones into it, then prising open the heated wood with cross-pieces, and keeping it so forced open until it is cold. The 'Kallispellem' canoes,* used by the Columbia River Kootanie and other inland Indians, are made of large sheets of bark, stripped from the spruce fir

* *Vide* cut, page 192.

or cedar tree (*Thuja gigantea*). These pieces are sewn together and sloped at both ends, to a conical point; the length of the canoe is usually about twelve feet, and the width about seven between the gunwales. A framework of wood is neatly made, over which the bark is stretched; the seams, holes, and weak places are lastly secured with a kind of gum. When an Indian paddles in one of these canoes—which, by the way, he can carry on his back with perfect ease—he squats at the extreme end; his weight sinks the conical point, which serves to steady the canoe, similar to the way a fish steadies itself with its tail; the other end is of course



BARK CANOE.

tilted up far above the surface of the water. These frail craft are more easily capsized than any other kind of canoe I was ever in, but the Indians contrive to convey heavy loads in them, shooting rapids, and

‘poling’ against streams, without often coming to grief.

To swim a stream with your horse requires great confidence and some knowledge of swimming. Horses all swim well, as a rule, so soon as they get over the dread of losing their foothold, and are fairly afloat. If you have no gun or anything spoilable, and you do not mind wetting your clothes, then ride straight into the water, always taking the precaution to see that you can

land on the opposite side by taking into calculation the distance yourself and horse will probably be drifted. Seize a good large lock of the mane hair, and twist it firmly round the fingers of the left hand; shut the hand close, to prevent the risk of letting it slip; free both feet from the stirrups, lean well forward, and the instant the horse begins to float and strike out with its feet, lay



CROSSING A RIVER.

your body horizontally, and kick back with your legs as you do in swimming; hold fast with the left hand; the horse will tow you, and with the right hand you must splash the water at the horse's head to keep him from turning to swim with the current. The more you can contrive to keep the horse's head up stream the better

it will cross with you. On reaching the side you are swimming for, as soon as the horse touches its feet on the ground drop again into the saddle, and ride your mustang out of the water.

Many writers advise holding on by a horse's tail when swimming a river, and thus letting it tow them over; I do not think it nearly so good a plan as the one above; I have tried both. When holding by the tail you lose all command of your horse, it can swim in any direction it wishes; you risk getting hit with the hind legs, and not unfrequently you get towed under water. Landing, too, is difficult; when the horse scrambles out it tugs you after it, or throws you down, and the chances are greatly in favour of your losing your mustang, saddle, and gear, altogether. When swimming above the horse and holding by the mane, none of these risks are encountered, and you can steer the animal as you would a boat. A river 400 yards wide can be safely crossed in this way, even if the current is moderately swift, provided the horse is strong, in good health and condition, and that the rider is an expert swimmer and well up to his work.

Supposing you have baggage in the shape of blankets, a gun and ammunition, and you dislike wetting your clothes, you must find a dry log light enough to float, or cut rushes, and make them into two bundles or sheaves; tie these together in the middle, as you would two sheaves of straw; place some light sticks

across and tie them fast to the sheaves. Failing sticks or rushes, you must tie up the things in the buffalo skin—remember I told you never to travel without one strapped to the back of the saddle. With raft No. 1, *the log*, you fasten all the things you have on the top of it, rolled up tightly in the ‘buffalo-robe;’ tie it firmly, and then take the long hair ‘cabresto’ I advised you to use in lieu of a bridle, or the lasso which should always be hanging from your saddlebow, and attach it to the log, so that there is no fear of its slipping off, then make the other end of the cabresto, or lasso, fast to the saddlebow, and the horse will tow the log-raft as it swims across with you. If this arrangement is properly executed everything can be ferried, without a chance of wetting it. Raft No. 2, *rush sheaves*, I like even better than a log, if so be rushes are obtainable; they float more evenly, and there is less chance of their rolling over. I have frequently seen Indians cross a river by sitting between two large rush sheaves and paddling them as they would a canoe. With No. 3 contrivance, the buffalo robe, the only precaution you can take against wet is firmly to secure the buffalo robe round the things you are going to tow over; for in all three cases the towing system is alike adopted. Horses free from the saddle or other incumbrance can swim easily a mile in distance if there is anything like a swift current; nevertheless, some mustangs are immeasurably better

swimmers than are others of equal bone and strength. Timid, scary horses are always bad to swim streams with. I had a very capital horse, and an admirable swimmer, which sank suddenly in the middle of the Kootanie River without any assignable reason; I dare say horses get cramp as we do.

The three grand requisites we have been looking out for—grass, wood, and water—are reached, a halt called, the loads are taken off and placed on the riatas, and the mules allowed to cool before unsaddling; if you expose their backs suddenly to the air whilst the skin is heated, the skin rapidly gets covered with large lumps. During this waiting, fires are lighted, tents pitched, and supper set agoing.

The cardinal point to be observed in making camp fires is 'never be in a hurry.' The most unpromising material, such as the twigs and boughs of green willow bushes, may be made to burn even during rain; if the traveller has been sufficiently provident to lay away a small parcel of well-dried or resinous wood from a previous camp, this is to be carefully used in the foundation; upon it the smallest ends of twigs are to be placed, frayed out at the ends in order to hold the flame. When these are kindled, somewhat larger twigs may be added, but in all cases proceed carefully, bearing in mind that green wood even in its driest state contains more than half its weight of water, and that a very large proportion of the heating effect, of the previously kindled

brands, has to be expended in evaporating off water, before the fresh fuel can be ignited. It is, therefore, in almost all cases a work of labour to fell trees for fires as is sometimes recommended, as dead sticks, which can generally be collected with less labour, usually make a much better fuel.

In all cases, the traveller cannot be too strongly impressed, with the absolute necessity of always extinguishing the fire to the last embers, before breaking up camp. Neglect of this precaution has led, in many instances, to the devastation of vast tracts of forest-country, which was formerly land redolent with animal life, into the so-called 'barren' lands, destitute of almost all the necessities of life, and which can only be travelled through with great suffering and privation.

Bush and prairie fires are sometimes attended with terrible results as affecting both life and property. I saw the ravages a bush fire had made along the Fraser river, and that extended its devastations inland, I am unable to say how far—which fire had been burning for nearly four years. Where it had passed not a single vestige of vegetation was to be seen, and the massive pines, black and cindered, bore no inapt resemblance to a forest of charcoal trees. Once or twice during our Commission work the bush got on fire, whether by accident or from Indian malice it was impossible to discover. At any rate, it rendered many of the trails impassable for a long time, and the vast accumulations

of smoke frequently obstructed the astronomers, when taking observations. No one would believe, except he saw it, how terribly fast fire runs through a forest of growing trees ; it seems to consume them as though they were dead and dry. Moss, dried leaves and twigs, are the active agents in carrying on a brisk fire. The fire creeps along, fed by these combustibles, until it reaches the stump of a tree ; then leaping from bark to branch, and branch to leaf, rapidly devours all but the solid substance of the tree, and even this very often succumbs to fire's insatiable appetite, and the burnt tree comes crushing to the ground, like a gigantic rocket sending off myriads of brilliant sparks in its downward course. The only remedy for the evil is to cut a road, or line in other words, betwixt the burning forest and the portion you desire to save, and to stamp out, or by beating with bushes extinguish, the fire running along in the moss and underbrush. By adopting this plan, we succeeded once or twice in checking the progress of a bush-fire.

A prairie fire is altogether a different affair. Settlers are in the constant habit of setting the prairies on fire purposely, in order to clear off and get rid of the old and coarse grass ; by doing this a young sweetherbage springs up in its place, better suited to grazing stock. Indeed, I am inclined to think vast tracts of forest have in the course of ages, been converted into what is now prairie, by the Red-men, who regularly burn the grass from off the prairies ; in most cases to ensure a

supply of young grass for the bison, and in later years for their horses; although they not unfrequently fire the dry grass in order to burn out an enemy.

Fire so kindled does not halt at the edges of the prairie land, but extends its ravages into the timber, and in this way gradually increases the size of the prairie. I have invariably noticed, when living on the Western prairies, that wherever a space of ground, say 300 acres or more, has been fenced in for any length of time, and carefully guarded from the effects of fire, that it has rapidly assumed the character of a forest. Trees and underbrush soon gain a mastery over the grass and flowers, which give place in their turn to a vegetation, more adapted to thrive in damp and shady situations. Fire is easily kept from injuring a fence, by ploughing a space four or five furrows in width entirely round it. There are stringent laws in the States and Territories relating to firing prairies; it can only be done legally at a given date, and all settlers, I believe, are expected to 'fire' at the same time, in order to insure the removal of cattle, horses, and hogs, that might otherwise be 'roasted whole.'

Grand as a bush fire is, I think a blazing prairie exceeds it in magnificence, the dense columns of wreathy smoke, as they curl up resemble mighty waves rolling on, to hurl themselves against some storm-lashed coast, whilst just ahead of them, a red line of flame extends right and left as far as eye can pierce the distance.

2/ As you watch the progress of the fire (the rate a fire travels varies in accordance with the force of the wind and length and dryth of the grass), ~~the~~ sullen kind a/- of roar seems to come from everywhere, having for a refrain a continuous sharp crackling, made by the tongues of flame in their furious onward course, licking up the loose inflammable materials. Every living thing dashes on heedless of direction before a prairie fire. The lamb might run side by side with the hungriest wolf without any risk; all enmity seems for the time to be laid aside, the one grand absorbing instinct self-preservation obliterating all others.

Is it to be wondered at that emigrants, and even bands of savages, have been from time to time burnt to cinders in these fires? What chance would there be if one was enveloped in burning grass or reeds seven feet high? No man on foot, and if the wind is hard not even on horseback, can travel so rapidly as the flames pursuing him. What can be done? Why, only one thing that I know of, and that is to fire the grass *before you*, and as it burns walk close after it; if you have sufficient time and presence of mind, by this expedient you may be far enough away to avoid any serious harm from the fire coming on upon you. I once had a hard ride to escape being burnt in a prairie fire, and only escaped by plunging horse and all down over a steep bank into a river. The fire was close at my heels, and rushing on quite as fast as my poor terrified horse could carry me.

I felt the gallant mustang was getting winded, and I expected every moment that it would fall headlong with me. My life hung, so to say, upon a mere chance; I knew not, cared not, what was before me, neither did I feel at all frightened when the horse, without even halting in its gallop, dashed over a bank, and we together plunged into the stream. The horrible dread of being burnt overcame every other feeling of fear; in no other case could I have forced the horse, by any amount of punishment, to jump from the top of such a high bank into a deep river. In this case its instincts told it that this one chance of escape alone remained.

At night these fires are more terrible than during the day; the whole horizon looks to be one sheet of flame.

The best material I have ever met with for kindling a fire, is known to the fur-traders in north-west America as gum-stick; nearly every Indian tribe employs it. When hunting or scouting, they carry small bundles of gum-stick with them, which, as its name in some degree explains, is pinewood densely impregnated with a highly inflammable substance, that burns with a bright clear flame; and when a piece of gum-stick is lighted it forms an admirable torch. Why, in a London fog, gum-stick would be worth its weight in silver. You may whisk and whirl about your torch to your heart's content, and never risk putting it out; I once accompanied a party of Red Indians in search of some missing persons; the night was intensely dark, but each one of

the Indians, carried a bundle of flaming gum-stick affixed to the end of a pole. The light so obtained was almost as bright as the magnesium light, and rendered the minutest objects perfectly conspicuous.

Gum-stick is obtained from dead, not decayed, pine-trees; it is a most singular looking material in appearance, not unlike a piece of deal that has been soaking for a long time in oil; it is immensely heavy, and quite translucent at the edges.

I have often been tempted to think, when examining a piece of gum-stick, the wood itself has been transmuted into a kind of paraffin; perhaps what has become gum-stick, would have grown into a branch, if nature had carried out her original design. The sap destined to form buds, leaves, and seeds, has been hindered at this spot in its upward or downward course, concentrated, changed into an inflammable compound, and by some process impossible to explain, pressed into the woody fibre, to become in the end gum-stick.

It is not by any means a scarce material, if you know where and how to find it; a practised hand learns, by a kind of instinct, how to pitch upon the right tree for gum-stick, although to explain the way to do it is an impossibility. Indians are particularly skilful in discovering it, and during the winters we passed at Fort Colville, they used to bring bundles of gum-stick daily, to trade for tobacco or anything else they required.

A few shavings sliced off with your knife, and lighted,

will kindle a fire even during pelting rain, to say nothing of its potency and power to give new life to a dying flame.

Another kind of resinous material exudes from the pine-trees in great quantities, more especially if the bark has been partly removed, or a chop has been made on the trunk. It is yellowish-white in colour, its consistence is that of thick gum, its smell decidedly turpentine as it exudes, runs down the tree, and hardens into large drops. An inexperienced hand on finding that it lights very readily, and blazes up like naphtha, would be disposed to employ it for fire-lighting; he would soon, however, discover that as the resin flamed away it at the same time densely coated the surface of the wood with a coating of lamp-black, or some other analagous form of carbon; and when pinewood is thus coated one might as well try to burn granite: hence this resin-coated timber is utterly useless for firewood; not only does it render itself incombustible, but has a like effect upon all the sticks in the fire, and is nearly as effectual in extinguishing your fire, as would be the famed 'l'extinctuer.'

I frequently used to amuse myself by setting fire to the resin encrusting the side of a pine-tree. There was not the slightest risk of kindling the tree itself; the material blazed up furiously for a short time, coated the tree with its sooty deposit, and then went suddenly out; the flame would not even char the bark.

If you want a fire, never collect chips or timber coated with resin.

Now to unsaddle: one packer stands where the aparejos are to be placed, whilst the other packers catch the mules by the halters, loose the synch, and lead them up to him. He now takes off the aparejo and places it on the ground, next the cloths on the top of it, and lastly, the corona on the top of all. Then he examines the back, and if he finds it all right he jerks off the halter and lets the mule go; if not, he investigates the aparejo and tries to remedy the evil at once. It is the duty of another packer to clean and thoroughly grease all the cruppers, coil up the sling ropes and carefully cover the aparejos (placed, remember, in a semicircle), with the canvas covers. The herders drive the band away, make fast the bell-mare and return to enjoy their suppers, their pipes, and the sleep needed to recruit them for the coming day. Let us bid them 'Good Night!' our march is at an end. I have some hints to give about building log houses, breaking horses, and collecting specimens of Natural History, and then I shall have fulfilled my mission; how well I must leave other wanderers to decide.

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CHAPTER XIV.

Mustangs: their first appearance in Mexico—Found in Texas, California, Oregon, British Columbia, and Elsewhere—Breaking a Wild Horse not an Easy Task—A Wanderer should be his own Manufacturer—The Way to Make a Lasso and a Cabresto—Lassoing, Saddling, Mounting, Roping Wild Cattle—An Exciting Adventure.

MUSTANGS, as wild horses are usually styled (and broken ones as well, for that matter), are, as a rule, small horses, rarely exceeding fourteen hands high. They are descended from Spanish stock, which must have been originally brought into Mexico by the original conquerors of that beautiful but unfortunate country now something like three centuries ago. During this period mustangs have increased to an extraordinary extent, and they have radiated, so to speak, in every direction. Vast herds now roam over the Texan prairies; and throughout Mexico to California, and from thence over Oregon, Washington territories, and British Columbia, to the head waters of the Columbia (west of the Rocky Mountains), an abundance of so-called wild horses are to be met with. Crossing the summit of the Rocky Mountains and descending to its

eastern side plains, there again we find nearly every Indian tribe possesses its bands of wild horses. To lasso, saddle, bridle, and mount a perfectly wild mustang is by no means an easy feat for a person to perform who is thoroughly up to its vicious tricks, who is at the same time an accomplished horseman, and who has again and again bestridden wild horses. Then what chance would a novice stand who did not even know how to throw a 'lassoo?' or, supposing him sufficiently expert to catch a wild mustang, who was ignorant as to the proper way to saddle it or to get upon its back and sit there when it was saddled. I have a few words to say, in the first place, concerning this instrument, weapon, rope, or by whatever name we may be disposed to designate the lasso, notwithstanding it has been so frequently described by almost all writers on sporting in the far West. In the first place, these writers never tell you how to make a lasso; at any rate, I have never stumbled upon any work containing such instructions. This I consider of the first importance. All persons, in my humble opinion, ought to be able, that is, if they choose to be wanderers, to make for themselves everything they need, excepting such articles as require for their production machinery and skilled labour.

A lasso is made from raw hide; the hide of a domesticated bull or cow furnishes the best material (by domesticated I mean animals really wild, which are

nevertheless descended from a domesticated stock); a red bullock's hide is considered preferable to either a black, white, or spotted one. I am not able to give a reason for it; still I feel convinced a red bullock's hide makes a tougher and stronger lasso than does a hide of any other colour. If neither a wild nor a tame bullock's hide is procurable, then buffalo, deer, or horse hide must be substituted in its stead. The hide destined to make a lasso, stripped from off the animal (and great care must be exercised in skinning, that not a single false cut be made, so as to weaken the fibre), is to be soaked in a river or a pool, in order to remove the hair; then staked out upon a level piece of ground and well stretched, during which operation it must be constantly wetted; two days will be long enough to keep it pegged out. Now you must determine whether you are going to make a *three* or a *four* strand lasso; it will require two large hides to make a three strand, and three large hides, or four small ones, to make a four strander. Bear in mind your object is to manufacture a rope thirty feet long, without a knot or a join, from two or three hides. A moment's consideration will make it plain to any person that there can be but one way of obtaining a strip which shall measure thirty feet in length, and that the only way is to begin at the edge of the hide, and to cut round and round until the centre is reached, in the same manner as shoemakers cut a boot-lace from a

small circular piece of leather, as Dido did when she claimed the land whereon to build Carthage, and the Mansfeldt of old, by a similar trick, got both estate and name from the Emperor. The width of the strip should not exceed half an inch. If the hide is of sufficient size to furnish a strip sixty feet long, cut it in two, and procure the third strip from another hide; if short of that length, cut two more strips from other hides, and make your lasso as long as the pieces will admit of. Each strip must be well wetted and wound round a small stick.

The next process is plaiting, which requires care and patience. A uniform circumference and exactitude in the tightness of the twist are absolutely essential to insure a good lasso; neglect of due caution begets unequal flexibility, a fault fatal to accuracy when throwing it. The three strips should be fastened to a tree, and as the twister proceeds with his work, the strips and platted portion must be kept wet; this is best done by filling the mouth with water, and then squirting it slowly over the work and materials. The lasso must be thoroughly stretched after completion, and then well greased. One end may be ornamentally finished off with a hair tassel; in the other end a loop must be woven by twisting together the three strips, and then finally covered with a piece of hide sewn tightly round it with tendon. This will be perhaps the best place to advise wanderers to procure the buck

tendon of a wapiti, or moose deer, to dry it, and then divide it into threads fine or thick, as required. It is stronger than any twisted fabric, and is easily procurable, and as easily carried. For sewing leather or raw hides it will be found invaluable.

To make a 'cabrass,' or cabresto, as a *hair* rope or lasso is styled, the hair must be first spun into a yarn. This is easily done by trenailing two sticks in the form of a cross, cutting a hole through the centre, and passing a round stick made smooth into it; a peg driven through the end will prevent the cross from slipping off. This long stick must be driven into a hole bored in a tree, or in the absence of an auger wedged betwixt heavy rocks or logs. A tuft of hair sufficient to form the yarn to be spun must be fastened to the cross and brought through a notch in one of the arms; then, after making a few turns of the cross with the hand, keep it twisting round and round by swinging the yarn, add hair as it spins, walk backwards until the string becomes too long to turn the cross, then wind the spun hair round the arms and commence *de novo*. If you want a practical lesson, watch a ropemaker at work in a ropewalk.

The same primitive machine will be found equally useful for spinning several yarns into a rope. Ristas made with strips of raw hide can be easily twisted with a like contrivance if constructed on a somewhat larger scale. To acquire a sufficiency of skill to throw a lasso with

force and accuracy needs a long and tedious schooling; skilled performers with the lasso commence to use it during childhood, and every day and all day long the boys practise throwing it. Hence, wanderers, you must be content to spend several hours every day, on foot, throwing at a stake to begin with. Next practise lassoing a quiet mustang. Now you may venture to try it on horseback, but if you can succeed in gaining an amount of proficiency equal to 'lassooing'

mustang round its neck in a 'corral,' or a bullock over its horns, it will be quite as much as you will be able to do. If you for one moment imagine that by any moderate amount of practice you will be able to throw a lasso round an animal's legs, whilst going at a raking gallop, or rope a bullock or a mustang on the open prairie, permit me to say you will be terribly mistaken. I can tell you the right way to lasso, saddle, bridle, and mount a wild mustang; but to insure your doing it is quite another question.

I have already told you the length of a lasso is ordinarily thirty feet, and it must be kept flexible by continual greasing. One end of the lasso is fastened to a ring provided for the purpose, or to the horn of the saddle; the other end, which forms a running noose, is, together with the remainder of the lasso, coiled carefully and held in the right hand. Thus equipped, I ride in pursuit of a band of mustangs. Having espied the animals I seek browsing peacefully

beneath the shadows of the trees, or on the grassy prairie, I craftily manœuvre to get to windward of them; neglect this precaution and their keen sense of smell will betray your approach, and then you may make up your mind to wish the band of horses good-bye for that day. Slowly, and by riding in an angular course, I get as near to them as possible. As soon as I find myself within about forty feet of the herd I dash my spurs sharply into the horse, whirl the lasso three or four times round my head to steady my aim and to keep the circle of coils clear, then I fling it over the head and round the neck of the animal I have selected, turn my own horse sharply round, sit firmly, press home the spurs, and gallop on, dragging my prisoner after me. The powerful pressure of the noose upon the windpipe prevents the frightened mustang from offering any lengthened resistance; it soon either falls or throws itself upon the ground, breathless, motionless, and to all appearance nearly lifeless. When the horse is down I dismount and carefully gather my way along the lasso until I can get close to the terrified beast, then I slip the blind over its eyes, slack the noose, and quietly await its recovery. I am going to mount it at once, so I take the saddle and 'cabresto' from off my tame mustang, hobble its fore-legs firmly, and turn it loose to feed. By this time my captive has recovered its breath, a sharp slap on the haunches induces it to scramble upon its legs, but the blind prevents any

attempt to escape. Now, by a little patience and manœuvring the double half-hitch* already described is slipped on to the under jaw beneath the tongue, and the ends of the 'cabresto' tied for reins. I next softly put on the sweat-cloth, then the blankets, and lastly the saddle, (be at all times careful to cross the stirrups and 'synch' over the seat of the saddle, and lifting the saddle well above the back let it drop gently upon the animal). This done, I give the saddle a good slap, and hold on tight to the lasso; this sometimes begets a vicious plunge or two, but as a rule the horse stands shaking and sulky. I have to be wary in getting the 'synch' under the belly, or I may get a 'cow kick,' in other words, a blow from the hind leg in a direction forwards. I have managed it safely, the leather strap is passed through and through the ring, and, placing my foot firmly upon the lasso I haul up the synch as tight as I possibly can, and make it fast. 'Synching' is always a risky performance, because the wild animal usually lashes out its hind legs, plunges, and not unfrequently throws itself heavily upon the turf, but so long as the blind is on it never attempts to get away. This paroxysm of rage over, I place my foot in the stirrup, give the horse at the same time a slap on the haunch, and rest my weight for a minute or two in the stirrup. If the horse is moderately quiet, I next rest my stomach on the saddle, jerk about and smack its

* *Vide* page 95.

sides with my open hand ; if, on the other hand, it is a very bad tempered and vicious horse, I still keep on until it permits me to rest on the saddle. Now I slowly and cautiously get my leg over the saddle, settle myself firmly in my seat, place my toes in the stirrups, coil up my lasso in my left hand, lean forward and jerk off the blind, and the battle begins in earnest.

It would be only wasting time to describe the pranks a wild mustang resorts to in order to unseat its rider ; the worst thing, however, is buck-jumping, which it does with such vicious violence as to require every effort on the part of the rider to avoid being shot out of the saddle like a shell from a mortar. I sit tight, yell at the top of my voice, spur with all my might, and try by all and every means to induce the mustang to start at a gallop. If he does this he is mine, and I am his master for ever ; if he lies down, rolls or gets me off by any other means, I turn him away and look for another. A wild horse never forgets it if successful in throwing its rider at the first mounting. After the first gallop there is not much further trouble needed. If the mustang turns out sound and strong, I brand it, and a few more lessons suffice to convert it into what is known in hunter parlance as a tame or gentled horse. It is rather singular that a dread of the lasso is always retained by a horse that has been 'choked down,' saddled and broken on the prairie. The mere act of putting it round the neck ensures instant obedience. I

have seen horses shake with terror when a lasso was laid across their shoulders. Of course, this system of breaking applies with equal force to horses taken from out of a 'corral,' as it does to those lassooed on the prairie. The lasso is used for catching wild cattle, just in the same manner as it is for mustangs or mules, only that bullocks are usually 'roped' round the horns. It may prove of interest to mention incidentally, as a caution to the novice, an adventure which befel myself and a Mexican while lassooing wild cattle. We came suddenly upon a wild Spanish bullock grazing some distance away from the herd. Perceiving our approach, it dashed off with all speed for the timber. A rather exciting race ensued, but the Mexican being the lighter weight, and having a better start, was the first to head the bullock. He sent his lasso over its horns, and attempted to wheel his horse round in order to tighten the noose, but quicker than either he or his horse could move away the maddened beast charged full tilt, caught the poor horse broadside on, and sent its long taper horn to the root into its side. The horse dropped dead, and the Mexican rolled over and lay by its side. The bullock, finding itself fast to the saddle of the dead horse, charged in upon the man, and would have served him the same as it had the horse if an ounce of lead had not thwarted its savage intentions. I merely relate this affair to show that lassooing is often a dangerous pastime.

As I have previously said, those who have never seen a lasso used by a thoroughly skilled hand can form no idea of the accuracy with which they learn to throw it; indeed, on the large cattle runs in Texas and South America it would be quite impossible for the herders to manage either the bullocks or horses, unless they were most expert performers with the lasso. To witness lassoing in perfection, and the systems adopted for driving, corraling, and branding where cattle run wild over large districts of country, the best plan is to visit a 'rodeo,' which takes place sometimes every year, at others longer intervals elapse betwixt the drives or rodeos. At these affairs all the stockowners from far and near assemble at a given place, where a large enclosure or corral is built, and into it all the cattle which can be collected are driven, to be owned and branded. These drives are always most festive meetings, but perhaps it will be the more interesting if I relate my own experiences of a rodeo than to simply say what it is.

Many years have passed away since I was induced to make one at rodeo. I need not go into a tedious description of locality; it will suffice to say that my three companions were old stock-men, who now and then took a turn at gold washing or trapping, more by way of a change than for love of gain. We met by accident at a small frontier town, I was seized upon immediately, and *nolens volens*, hustled into a bar-room.

'Now Cap,' said Mose (one of the three), 'it aint no

manner of use for you to try back tracks, we ar' just all gwine to the roda, and that's your hand, bet your pants, so we'll fire-up. I feels a kinder hot, like a cinder as wants quinchin.'

We did several drinks, which, together with my friend's persuasions, overcame all my objections, and arrangements were finally made that we should depart early on the following morning for the general trysting place.

We started at sun up, our destination the 'rodeo' corral, about twenty-four miles distant. A pleasant breeze blew over the hazy plain, just sufficient to rustle the oak leaves as we swept past the trees at a rattling gallop. Leaving the plain, the trail led through groves of oaks, then up a winding 'cañon,' and across several deep ravines, to strike off at last upon a faint path leading towards the hills, following which for some distance, we ascend a steep ridge, and pause to look down into a grassy valley, through which winds a river. On either side of it level plains stretch away as far as eye can scan the distance, and immediately below us tents are visible dotted irregularly about. Mose puts an end to my reverie by saying, 'We've made the ranch, boys, thar's the corral for the roda.' Our tents, simply strips of canvas stretched over a ridge pole, were very soon adjusted and pegged down. These preliminaries arranged, and the mustangs safely tethered, we had time to look round. Seldom does it fall to one's lot to witness such

a singular assemblage as were now camped in this tranquil valley—there were Americans, French, English, Sonorans, Texans, Kanakas, from the Sandwich Islands, and even Chinamen.

Beneath the shadows of the trees, as we strolled along, were groups of gamblers busy at their work, and the jingling coin and rattle of the dice-box sounded in strange contrast with the songs of birds and the hum of insects. There was actually an hotel, if a large tent, with 'What Cheer House' written in large black letters over the entrance, could be so designated, and like travelling caravans are usually managed, the most attractive part of the establishment was clearly on the outside. Long planks arranged on stakes driven into the turf served as dining-tables, or for feeding in general, whilst across the door, or rather entrance into the tent, was a shorter plank, and, lest there should exist any doubt as to the purpose for which it was designed, BAR, in big writing, surmounted it like a banner. A few dirty decanters, together with some sardine tins and cigar-boxes, made the only garniture the bar could boast of, unless we include as part of the furniture a particularly cadaverous-looking individual, who seemed, for one could only judge of the whole by the upper half, to be made up entirely of shirt front and studs, his face, head, and hands, being merely accidental appendages.

About a mile further up the valley was the corral, a large space, enclosing several acres, made of felled

trees, placed one on another, just like the walls of a log shanty are constructed, but further strengthened by lighter trees, sunk on each side the log fence, the tops being lashed firmly together with strips of raw hide, the height of this fence being about nine feet. Strong poles, each end of which traversed in a groove, served for a gateway; and from each side of this gate was a long wattle fence, carried out for some distance and gradually widened from the entrance—an arrangement which greatly facilitates the getting the wild cattle into the corral. Near to this corral was a much smaller enclosure, made by sinking tall trees deeply into the ground, instead of piling them one upon another. The upper ends, as in the corral, were lashed together with raw hide. Round the outside, about five feet from the top, was a stage standing on which one could easily look over and see what was going on inside. At either end was a small den, communicating with the interior by a trap-door, which could be hauled up by a rope by a person standing upon the platform. The use of this arena will be explained anon.

We adjourned to the 'hotel' to supper, after our tour of inspection—most of the visitors at the 'rodeo' boarded at this primitive house of entertainment, finding it cheaper and more convenient than providing provisions and pack trains for themselves.

Do not imagine that we had to chew jerked beef and

dried salmon, or feed on rancid ration pork—not a bit of it, we had such living provided by mine host as would have cheered the heart of the most fastidious epicure. Here, far away in the mountains, we feasted on venison, wild turkey, antelope, beef, quail, and hare, green corn, butter, milk, coffee, and corn dodgers.

The first two days were occupied by all hands in repairing the corral, and awaiting fresh arrivals; whilst the evenings passed pleasantly away—tales of adventure, songs, jokes, and monte, easily beguiled the time. On the third day the drive commenced.

‘Cap, you bet your bottom dollar,’ said Mose, ‘we’re gwine to have a pretty tall time of it. I see any quantity o’ painters (panther) sign round camp; I guess old Bull, a powerful dog he had, is about the smartest bit of stuff ever you see wrapped in dogskin for making a catamount smell thunder. Only three weeks agone the old dog skeered up a pair “a’ painters;” the varmint treed, and the way he howled at ’em, to let me know he was all thar, was a caution.’

‘Well,’ joined in a stranger, ‘I kalkilate me and old buck-horn know whar to drop on to the biggest kind of a *bar*. We struck his trac as we come over the divide, and run it clear t-hum, whar old Ephraim camps, you may bet your last cent.’

On making a subsequent inquiry why this bear trail was deemed such a grand discovery, Mose informed me in his quaint manner that the great feature at the

'roda' was the fight between a grizzly and a wild Spanish bull, which always took place, provided a grizzly could be procured.

Herd after herd were rapidly driven into the corral, until it was nearly filled with cattle of all ages; wild and maddened by driving, they fought furiously with each other, bellowed, and strove by every expedient to break from the enclosure. Lassoing such as were not plainly marked, bringing them out one at a time, throwing and rebranding, demanded great courage and skill. The lasso was in most cases thrown with unerring accuracy over the horns of any beast selected from amidst the herd; then setting spurs to his horse, the herdsman dragged the struggling bullock from the corral. Other lassos were then thrown round its hind legs, and the horsemen riding in opposite directions, the beast was quickly thrown and branded, the lassos quickly loosed, the course cleared, and the infuriated animal allowed to go at large. Many horses were badly, others fatally gored, and several stock-men and herders were likewise seriously hurt.

The right of ownership established, and the cattle once more at liberty, 'Old Ephraim' (the trapper's usual sobriquet for a grizzly bear), was next to be lassoed, and brought to the smaller enclosure, a fine young bull having been selected from the herd to face him.

The sun had barely found its way above the hills, and the valley was still enveloped in mist and shadow,

when our cavalcade selected to drag out the grizzly from his sleeping quarters cantered briskly up by the side of the stream. Following its windings for a mile or two, we struck off to reach the timber, on entering which our guide led us up the hill-side to a large pile of rocks which were supposed to be Ephraim's home; and if the old hunter's theory was based upon fact, the bear should be at that very time sleeping off his supper in some deep cleft or crevice. A large kind of drag, made of stout poles, had been sent ahead, drawn by a team of oxen—this conveyance was for Bruin.

On nearing the lair, the hunters dismounted, and very soon made out that the bear had recently passed, and was certainly concealed amidst the rocks. Bull and two other dogs were loosed, and dashing furiously into the openings amid the stones, soon let us know that 'Ephraim' was at home, sure enough. With lassos coiled in readiness, several horsemen sat on their trembling mustangs, anxiously awaiting his appearance. An angry grunt announced his coming, and as he scrambled clear of the rocks, champing and growling, his hair erect, his cold hard eyes shining like burnished metal, he looked the very incarnation of savage ferocity. As thus he faced his foes, debating within himself whether he should run or fight, six of the riders spurred towards him, and the scene was changed to one of wild confusion; horses snorted and plunged, the lassos whistled round the heads of the

riders, and shouts of 'now rope him, boys, give him thunder,' made the forest ring again. As if by magic, several lassos were round his neck; the horsemen forming a circle, pinned him in the centre, whilst other lassos noosed his hind and fore legs; thus hampered, spite of every effort to escape, Bruin was secured to the drag, and in grand procession conveyed to the small corral, to be made a prisoner in the den already prepared for him, the bull having been previously secured in a similar contrivance on the opposite side of the enclosure.

Heavy bets were laid, and drinks *ad libitum*, freely indulged in during the evening. The bear had his friends, who were very confident that his size and strength must tell; whilst others were equally sure that the condition and horns of the bull would make the latter the conqueror.

I was too anxious to sleep much, pondering on the respective chances of the two combatants; there was a strange fascination in the idea of witnessing a fight between two powerful beasts, which in habits and modes of defence were so opposite.

At the first blush of morning I turned out, and as others were quite as anxious as myself for the event, breakfast was speedily despatched, and a general run made for the platform. All being ready, the trap-doors were slowly drawn up, and out rushed the combatants. I must say, on making their appearance, my sym-

pathies were with the bull, which seemed to me to be much the nobler animal of the two, lithe and wiry, yet withal wonderfully massive about the shoulders, he gave one the idea of a splendid combination of strength and symmetry. For a brief period he stood glaring at the pickets and people, his head erect, his eyes flashing, his nostrils distended, and his whole form fixed and rigid as if carved from marble. The bear, on the other hand, was the more conspicuous for ponderous weight and gigantic strength, rendered more formidable by his terrible teeth and claws. A sharp cut from the end of a lasso roused the bull from his reverie, and as though attributing the insult to his enemy, he lowered his horns, gave a deep grumbling bellow, scraped with his fore-feet, sending the dust and grass clean over his back, and then charged. The bear evinced no sign of wavering, but standing erect on his hind legs received the bull much in the same way as he might have done if he had been a trained and gigantic prize-fighter.

Though somewhat unwieldy, Bruin was quick and wary. No sooner was the bull within reach than both horns were clasped in his powerful grasp, and the bull's head pressed to the ground by main strength, he bit savagely at the nose of his antagonist, and raked strips of flesh from the bull's shoulders, with his hind claws, just as a cat fights when on its back. This position was maintained for some seconds, the bull

struggling furiously to free his head; the bear straining every muscle to pin him to the ground; no apparent advantage was gained on either side, and loud cheers and bravoës were indulged in by the backers of each. To my mind the result of the battle clearly depended on the merest accident.

As if by mutual consent, both animals gradually ceased to struggle, and several minutes passed away whilst the combatants, locked in this deadly embrace, lay still, but panting as if at the last gasp. Suddenly the bull, by a desperate jerk, wrenched his head from the grasp of his adversary, and retreated a short distance; the bear also got up and stood on the defensive ready to receive him. All watched for the issue with breathless interest. Rendered furious by pain and passion, the bull again dashed at the bear with such impetuous force that, despite the blows Bruin dealt with his huge feet, he was rolled over and over in the dust; endeavouring, as best he could, to defend himself against the thrusts of the bull. Either by chance or design, both horns were pushed underneath the bear, and, by a sudden jerk of the head, its side was laid open as if cut by a knife.

It was now very evident that Ephraim must soon give up; both were grievously wounded, yet maimed and gory they fought on with the desperate certainty of speedy death. The bear, prostrate upon the torn turf, vainly struck out with his feet to avoid the horns of

the bull. Clearly determined to end the conflict, the bull drew back and, lowering his head, made a tremendous charge; but, blinded by the blood streaming over his forehead, missed his aim and fell headlong to the ground. The bear in an instant rallied and scrambled upon him, and twice they rolled over locked in this terrible death struggle. A few minutes more and the bull's fate would have been very soon settled; when, to the astonishment of all hands, the bear suddenly relaxed his efforts and rolled from off the body of his foe. Feebly dragging himself on the turf a few yards, a convulsive shudder shook his massive frame, there was a clutching motion of the claws, followed by a heavy sobbing sigh, and poor 'Ephraim' was dead.

The bull managed to get on his legs again; and raising his mutilated head, made a weak effort to shake it in triumph, as loud shouts of praise proclaimed his victory. Could the poor bull have understood and appreciated these plaudits it would have been only a brief and fleeting pleasure. The blood streamed in countless rivulets from his wounds, he tried to stand to the last, his legs were gradually stretched wider and wider apart, his breathing grew short and convulsive, his head slowly drooped. Then dropping on his hind-quarters and stretching himself on the grass, he died without a struggle. So ended the battle; there was no victor to crown with laurels; the bloody encounter, with its somewhat unexpected termination, saddened even

those wild and hardy men, intense as the excitement was during the struggle. Such a sight I should never care to look on again. As they died, so were their bodies left to the wolves and vultures. Tents were struck, the hotel demolished, or in the words of Mose—the boss landlord had hauled down his shingle, and the valley that but a few hours before resembled a fair was left to the birds and beasts that in their turn would wage war over the dead bodies of the combatants. So ended my first experience of a ‘rodeo.’ I have been present at many since then, but in all, the programme of events was pretty nearly alike.

I must ask the reader to refer—if so be he does not remember what I said about riding saddles—to Chapter IV. He will now be able to comprehend fully the advantages the Mexican saddle has over all others for breaking wild horses and lassoing. I do not hesitate to say that the strongest English riding saddle man’s skill could produce, made as at present for hunting purposes, would not remain upon a wild mustang’s back for five minutes; no buckle, strap, or sewing would stand any more chance than darning-cotton. If you go on a visit to the prairies, by all means learn to use a lasso, and practise saddling, bridling, tethering, and hobbling your own horse. If you know practically how to do these things yourself, you can always direct others, and at the same time see that they perform their work properly. Details, which may

appear trifling and insignificant in a civilised country, will be found of far greater consequence and value to the wanderer or emigrant, than either perhaps is at all aware of, when he finds himself cast upon his own resources amidst the wilds of a far-away country.

As travelling in summer is usually performed with pack animals, so in the winter dog-sleighs and snow-shoes are the means resorted to for every kind of transport.

CHAPTER XV.

Winter and Summer Travelling with Dogs—Idlers—Free Fights—Packing Dogs—The 'Travail' preferable—How to make and use a Travail—The Sleigh and Tobogan—Bone Rings and Toggles—The Way to Harness your Team—A long Whip desirable—Precautions against Rheumatism—'Sure Bind Sure Find'—Feeding Dogs—Sore Feet—Merry-Bells.

IN summer, dogs carry their loads on their backs packed on small pads; in winter they are harnessed to light sleighs; then the wanderer must protect his feet as already pointed out, tie on his snow-shoes, and tramp over the frozen rivers and snow-covered plains, either ahead of or beside his team of dogs. It is a pretty and a cheery sight in summer-time, when the hills are hidden beneath the leafy trees, and the valleys are decked with wild flowers, to watch a team of dogs trotting briskly along, each with its little load. Now and then one presumes to stop, in order to regale itself with a good sniff at some attractive perfume, or to lap, perchance, from out a tempting pool. Idlers such as these frequently get in the rear of their comrades; the sharp crack of the whip quickly recalls them; frightened, they scamper along to regain the train. If, however, the loads are not securely fastened on, the galloping usually results in scattering them along the

trail. If you are angry, perhaps the misbehaving dog gets a taste of the thong before you repack it. A row is of constant recurrence when you are travelling with dogs; what they quarrel about no one can tell, but all at once, reckless of loads, two begin to fight; then the remainder, seeming to have each one an individual interest in the riot, join, until the whole team roll, snarl, and snap—a very heap of dogs. The whip must be used freely in order to restore peace and order. This sort of thing happens just as frequently when one is driving a team of dogs in a sleigh. If any two begin to fight the rest are certain to take part in it.

There are two systems of employing dogs for purposes of transport during the summer—the one I have just referred to, that of ‘packing’ the loads upon the animals’ backs; the other plan is called ‘the *travaille*.’ To ‘pack’ dogs is not by any means a good plan; they cannot carry heavy weights, neither are they able to bear tight girthing. The ‘pack pads’ are consequently continually slipping back over the dog’s rump, and much time is wasted in readjusting the pad and the load tied to it. The pad is simply a kind of leather cushion stuffed with horse or deer hair; no rule can be laid down as a guide to its right size, because that must entirely depend upon the build and character of the dog which is to wear it. The load must be fastened on precisely in the same way as loads are fastened to *aparejos*.

For summer work with dogs I prefer the 'travaille,' which is made in this way : two light sticks about an inch



THE 'TRAVAILLE.'

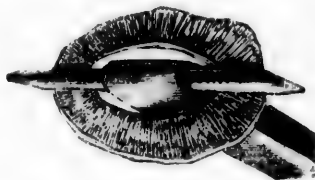
and a quarter in circumference must be procured, the straighter the better ; measure from the dog's shoulder, and cut the sticks so that about four feet shall trail upon the ground behind the dog, or less

than this if the dogs are small or weak ; the ends at the shoulders must be fastened to a leather strap which should fit round the animal's neck like a collar. The portion of the sticks intended to trail upon the ground must be spread open by tying in cross-pieces. These pieces should vary in length, the shorter stick nearest the dog, the longer at the ends of the side poles ; when completed, of course the 'travaille' is triangular in shape. The load is first fastened on with hide straps to the 'travaille ;' the dog is then brought up, its head slipped through the collar, and, with a stick on either side like the shafts of a cart, it tugs along the load with far greater ease than it could have carried it. This 'travaille' will be found very useful applied to horses when no pack-saddles are obtainable. I need hardly say that dogs should never be employed in the summer if horses are procurable.

For winter transport dogs are absolutely essential ; they trot over the snow without breaking the *crust* (the

frozen top of the snow), that a heavier animal with hoofs would go through at every step. First, of the sleigh two patterns are usually employed; one of these is made with two 'runners,' the other is simply a flat piece of wood turned up at each end. With a good firm 'crust' on the snow I prefer to use the sleigh with runners; if, however, the snow is soft, then I like the flat sleigh, usually styled a 'tobogan,' the better of the two. The size of a dog-sleigh must, of course, be entirely regulated by the quantity of goods, or other things the wanderer has to put on it, and the number of dogs he has to haul it; the lighter it can be built, consistent with a due amount of strength, the better. To give detailed directions as to the way to make a sleigh would be only a waste of time; a little ingenuity is what the wanderer needs, having which, an axe, a knife, and some strips of hide are the only things he will require (if sticks are to be got) to build a sleigh of any size and pattern. To harness dogs well, you will require practice. Let us suppose a sleigh to be packed, and awaiting the team. A piece of hide is fastened exactly midway betwixt the forepart of the runners; to this loop the harness is attached. Six dogs make up a fair average team, and before I go farther with my directions for harnessing, let me advise all who use dogs for sleighing to saw off forty or more rings from marrow-bones (the shin-bones of either moose or wapiti deer answer best) during the summer; (if you have no saw,

notch a knife,) also, during your leisure, cut out a good quantity of 'toggles,' from either rib or leg-bones; by 'toggles' I mean round pieces of bone, made small enough to slip through the bone ring; the length of each toggle should exceed the diameter of the ring; a notch should be cut round the centre of the 'toggle,' to prevent the hide strap, when fastened to it, from slipping off; carry these rings and 'toggles' with you always during the winter travelling; you will find them



BONE RING AND 'TOGGLE.'

invaluable for fastening the harness. Sleigh-gear put together with this simple contrivance can be taken to pieces, lengthened or shortened, without the slightest trouble; knots

are apt to slip when the hide gets wet, and when dry it is impossible to untie them. To harness seven dogs abreast in Esquimaux fashion, one strap, say eight feet in length, should extend from the sleigh-runners; to the end of this strap a second loop of hide is affixed—(in cutting hide strips for harness adopt the plan already explained for making lassos)—to which each dog is separately made fast; a single trace suffices for each dog; the centre dog should have its trace rather longer than the others. It is always best to give dogs plenty of trace length, as it enables them to spread when pulling. A collar of hide, which should be bound round with soft bark or cloth, fits round each dog's neck; a trace

comes from either side of the collar, two other straps, known respectively as the back and belly band, keep these lateral traces from slipping up or falling down. Immediately behind the dog the two traces are joined and one strap only is used. When ready to start, all the traveller has to do is to fasten, in the first place, the long strap to the sleigh, next the six traces to the loop at the end of it, taking care that the longest trace is in the centre. Spread out all the collars, and as the dogs, one by one, are led up, slip a collar over the head of each and fasten the belly strap (it does not take six



DOG HARNESS.

minutes to harness seven dogs); the largest and strongest animals must work in the centre, the smallest and weakest on the flanks. Some travellers prefer to use their dogs, side by side, in pairs, but I do not think they work nearly so well as they do abreast: the leading dogs get crafty and skulk their work, and it is not easy to see, when dogs are pulling in pairs, if each is doing its fair share of the work. When abreast all the traces are visible; a slack one at once detected and the skulker gets a touch of the whip for being an idler.

A very long whip is handy, because down hill or on slippery ice the traveller may feel disposed to rest his legs by sitting on the sleigh. To reach the dogs a thong

of hide will be required not less than twenty-five feet long, a handle about two feet in length is all-sufficient ; a little practice will enable you to strike either of the dogs with unerring certainty. Be very careful when you camp to tether your dogs securely with a short hair-rope ; fasten them to trees if you can, if there are no trees drive in pickets ; a hide rope would be chewed in two directly. Never give a dog more rope at night than will enable it to lie down, and do not forget to have a square piece of buffalo or deer hide for each dog to sleep on ; this helps to prevent rheumatism, a malady that too frequently disables sleigh-dogs ; these hide mats add nothing of any consequence to the weight of the load, and very much to the comfort of the dogs. However quiet and faithful my dogs may be, I never trust them at night ; they are often induced to follow lady wolves or coyotes, and you may have either to wait days for the prodigal's return or lose him altogether. ' Sure bind sure find ' applies most pertinently to sleigh dogs. Feeding your dogs must in great measure be regulated by chance ; if game is plentiful there is no difficulty, or if fish of any kind is obtainable. They do their work well upon a ration per day, and soon learn to devour it greedily ; but if the traveller has any idea when he starts upon a journey that game will be scarce, he must take a supply of either dried flesh or frozen fish. My rule, and I am sure from long practice it is a good one, is only to feed my dogs at night when I camp ;

then if I have enough I let them eat as much as they please, but it is fatal to good travelling to allow them any food in the morning—they work lazily, and often lie down.

Dogs travelling on snow which has been frozen after a thaw frequently become very sore-footed; the best plan in this dilemma is to put leather mocassins upon their feet; these are easily kept on by tying them round the leg above the false or 'dew claw.' I always put on the dog's mocassins (merely bags made of leather or stout hide) if I anticipate rough travelling, on the principle that prevention is far better than a cure. A string of bells to go round each dog's neck is a great addition, although of no particular use; the jingling music of the bells is always a welcome sound, a merry peal that seems to cheer alike the faithful dogs and their solitary master.

To protect the eyes against the blinding effects of the sun-rays, which are reflected from the snow when travelling over it, is a difficulty no plan with which I am familiar will entirely surmount. I have twice suffered terribly from snow blindness, and to this hour my left eye has never recovered its damaging effects. The Esquimaux use large goggles, and there are snow spectacles made, of various kinds and patterns, for arctic travellers; but I prefer, to all other expedients, (and I have tried a great many), wearing a green gauze veil, (which can be twisted round the hat when not

required), and thoroughly blackening the forehead and all round the eyes with charcoal or soot before starting. The black seems to absorb, or in some way temper, the glare of light, that no person can endure very long without growing temporarily blind, or suffering from intense inflammation of the eyes. Goggles and spectacles of all descriptions rapidly become frosted over, from the condensing of the vapour exhaled in respiring, and in this state, of course, are opaque, and require cleaning before further progress can be attempted.

Though to a casual observer a team of dogs appear to be huddled together without any regard to order or regularity, nevertheless a skilled traveller pays very marked attention to the disposal of his dogs. The leading dog is the one by which all the others are guided and directed; sometimes they diverge, spread out and quarrel; but a gentle touch or two of the whip soon brings them all together again. Many untrained dogs are constantly getting entangled by darting under the traces of the others, in order to avoid the whip. With a good leading dog there is not the slightest difficulty in keeping a track; if there is the faintest mark of a sleigh-runner or snow-shoe visible, the dog keeps his nose down to the snow, and goes as true as a hound upon scent; if there is no track, and you are riding on the sleigh, some caution is requisite to drive the dogs in the direction you intend travelling. When you desire to halt you call out, 'Ah! woa; ah! woa;' but if home-

ward bound, the dogs often exhibit a disagreeable spirit of rebellion, and obstinately refuse to stop. Then both your heels must be employed as breaks; forced into the snow, they soon bring the team to a standstill; but remember one thing, never get out of the sleigh unless you keep one or both legs firmly planted against the front bar or rail of the sleigh. Sleigh dogs are the most crafty animals imaginable, and are ever on the watch for a chance to escape. If once they get clear with the sleigh, you will have to be pretty light of heel if you catch them until they reach camp. When your leg or legs are before the front bar, if they should make a sudden and unanticipated bolt, you have simply to fall upon the sleigh, and then you can soon bring the refractory team to their senses. If dogs are properly trained they ought to lie down at the word of command, and when you halt lay the whip lightly upon the head of each dog as you order it by name to lie down. A very little training is sufficient to make the dogs understand what you require them to do. With good sleighing, when the 'crust' is hard and smooth, seven good dogs will easily draw eight hundred weight, at the rate of seven miles an hour, and this for five hours at a stretch; with a very light load, good dogs will accomplish ten miles an hour.

In Canada, the system of working dogs in sleighs, or tobogans, is invariably to harness them in pairs side

No such thing,

by side, although for very light loads single dogs are often employed.

Gellington
27 — By this simple mode of conveyance, all the mails, parcels, and dispatches are transported over the ice in Canada, during the winter, from Montreal to the head of Lake Superior. Some person who understands the work, makes a contract with the Government for the transmission of the mails, during the winter, throughout all the Lake districts. On Lakes Huron and Superior the actual transport is sub-let to Indians and half-breeds, who travel on snow shoes and pack the mail bags upon light sleighs, which sleighs are usually tugged along by six dogs, worked in pairs side by side, providing relays, and, at the same time, being perfect masters in the art of travel, these mail carriers manage to transport the letters at the average rate of about sixty miles a day.

No in
Canada

I once passed a bitterly cold winter at the Bruce mines—copper mines situated on the north shore of Lake Huron, nearly opposite to San Joseph's Island. Winter begins in this icy region about the beginning of October, and after the ice is fairly 'set' on the lakes, all communication with the rest of the world is entirely cut off (excepting dog sleighs and snow shoes are used by the traveller) until May in the year following. All the carcasses of sheep, pigs, and bullocks, killed and stored for the support of the miners and their families during the winter, are exposed to the air until frozen as

hard as marble, then they are hung up in large sheds, built for the purpose, to be consumed as required ; the freezing is a perfect preservative ; meat, so prepared, if prevented from thawing, will keep sound and sweet for years. To be eaten, a joint is chopped off with an axe, soaked in tepid water until thawed, and then cooked in any manner best suited to the tastes of those who intend to consume it.

It is hardly possible to picture a more weird scene of desolation than a wide expanse of frozen lake, covered with snow, presents to the eye, more especially when, journeying during the night, a course usually followed, if there happens to be a sufficiency of light to discover the track ; because it is much less trying to the eyes by night than it is during the day, and the risk of snow blindness is very considerably diminished. Nothing seems to retain any sign of reality as one tramps along over the snowy waste, the dogs trotting after jingling their bells. The silvery moon pours her streams of pale light upon the snow, and the rays, instead of being absorbed or reflected, seem in a mysterious manner to accumulate, until one is tempted to fancy himself splashing through a shallow lake of light. Every visible object appears transformed into something intangible and unreal ; the tracks upon the snow grow into huge proportions ; trees along the lake shore line resemble giants in children's fairy tales ; a hillock of drift takes on the form of a mountain ; now

one fancies rippling water is just ahead, which turns out on a nearer approach to be snow, ridged by the breeze, reflecting light from off the polished facets of its myriad crystals; now you feel positive a deep ravine is in the way, the gloomy depths of which will have to be traversed; but the heart beats all the more lightly, when the imaginary cleft resolves itself into the heavy shadow of a passing cloud. Silence, like a guardian spirit, hovers with muffled pinions over all, and the ear fails to catch the faintest sounds, save the steady rhythm of the panting dogs, the cheery tinkle of their tiny belfry, and the steady crunch, crunch, as the snowshoes splinter the icy crust.

Many and many a night have I travelled through scenes like these on the frozen surface of Lake Huron.

It was always a kind of holiday with everybody when the 'mail' was despatched, a mere speck at first, coming over the snow towards the mine. The men left their work, the women and children their warm stoves, to group together upon the landing-place where the sleigh tracks led off across the lake, there to await the advent of good or evil news from home, as it might be.

To harness dogs to work in pairs it is advisable to provide each dog with a trace of its own; the collar, back and belly straps, the harness, in other words, is the same as that used for driving dogs abreast; a single trace should extend from each dog to the loop or 'tug strap'

affixed to the runner. It is a bad plan to fasten the traces of the two leading dogs to the harness of the next pair, and so on to the hindermost. Dogs pulling directly from the sleigh can draw a greater weight than if attached to one another; they also work more good-temperedly, and are less disposed to quarrel.

To tramp well on snow shoes is by no means a very easy art to acquire; it is one thing to tell a novice the proper way to walk with snow shoes on his feet, and another to enable him to do it when the right way is learned. The snow-shoe (*vide* cut)* I usually employ is about three feet ten inches in length, and eleven inches in width, but the size must be governed in a great degree by the hardness or softness of the snow; the softer the snow, of course the larger must be the surface of the snow-shoe to prevent sinking. The outer frame is made of bent hardwood; the centre part that rests on the snow, and upon which the foot is placed, is a lattice work made of thongs or strips of raw hide. A skilled performer never stoops to strap on his snow shoes with his hands, but simply twists his feet into the loops of the shoes, and trudges away. An inspection of the illustration will show a small hole nearer to the toe than the heel of the snow-shoe; in this hole the toes of the traveller play a very important part in the performance of snow-shoe walking. When the foot is advanced the snow-shoe is carried on resting upon the

* Page 242.

front of the foot just where the toes are articulated, when the advanced foot is planted on the ground in order to bring up the other; the shoe is slipped from off the toes, and the foot stands firmly upon the lattice work. In order thus to catch up and drop the shoes quickly, great practice is needed. The shoe is never carried entirely clear of the ground; the heel trails, and leaves a mark like a line upon the snow. One can tell at a glance the snow-shoe track of a novice from that of a skilled performer; the prints upon the snow made by the former are irregular, and not equidistant; the heel trace is wavy, sometimes cut deeply into the snow, at others barely touching it, whilst every here and there a jumble of tracks clearly evidence a scramble, perhaps a fall. A favourite pattern of snow-shoe with the Indians east of



SNOW-SHOE.

the Rocky Mountains is what is termed the 'bear's foot' pattern, a small snow-shoe nearly circular in form, but made precisely on the same plan as the longer ones; they

answer very well, if the crust is hard, for short journeys, and they are quickly and easily made. A snow-shoe walker can cover a great many miles of ground in a day when he once acquires the habit or art, whichever it be, of swinging one foot well clear of the other, and taking long striding steps. Beware of dogs following you if walking on snow shoes; if they step on the

heel of your shoe the chances are you go head first upon the snow; and let me tell you it is by no means an easy feat to regain your perpendicular when you have large snow shoes fastened to your feet.

I have previously given the requisite instructions for protecting the feet against frost-bite, which, by the way, is best cured by briskly rubbing the frosted part with snow.

Four times in my experience of cold regions I have seen men lose both their feet from the effects of frost, and I saw a man lose his nose, and several times I have known fingers and thumbs, from the same cause, require amputating, to save the life of the individual.

CHAPTER XVI.

The Wild Honey-bee—Bee Hunting—How to *line* a Bee—Honey Hunting often a Profitable Employment—Texan Islands—A Hunter's Disgust—Edible Berries—Roots often Poisonous, and to be Eaten with Caution—Substitute for Tobacco—Insects which are Devoured by the Red People—Pemmican—Preserving Meat—Extractum Carnis: Morgan's system—Preserving Beef and Mutton fresh—Jerking Beef—Catching and Curing White-fish and Salmon.

THE stream and the lake will yield the traveller who knows his work and is at home in the wilderness an inexhaustible supply of fish on the plains and prairies; he can procure beef whilst in the woods, and amongst the open timber, venison, and lesser game, feathered and furred, are at all times obtainable; but there yet remains one more luxury to mention. Although a knowledge of how to find this so-called luxury may often save a wanderer from starving, still as a general rule a hunter would not consider wild honey a necessary article of diet, but would look upon it simply as a pleasant addition to his daily meal.

I am quite safe in saying that the *art* of bee-hunting is only to be acquired by long years of practice. To 'line a bee' home to its honey tree or 'bee-gum' needs an eye trained specially to the work and at the same

time a thorough acquaintance with the insect's habits. Whether or not the wild-bee of America is the same specifically as our ordinary honey-bee (*Apis mellifica*) is a question entomologists are by no means decided about. The busy insect has in all ages been a riddle to the learned, a source of wonder to the scientific, and a faithful servant to man.

To the honey-hunter it matters little to what species the bee he 'lines' belongs, or whether imported from other countries or a native of the plains on which he searches for it. So that it makes honey and wax and stores them in the hollows of the trees, the bee-liner cares not to trouble his head about any other details in the insect's history.

Wherever wood, water, and wide-spreading plains covered with grass and wild flowers are to be met with in the southern parts of America, there wild bees are pretty sure to be found. They take possession of hollow trees, and if the hollow space is of sufficient size to contain it, often a good honey tree will yield as much as eight gallons of honey. The summers are very long, and the winters, the little there is of them, are not by any means cold, so that the bees can work very nearly all the year round. The only equipment needed for bee-hunting is an axe, a small quantity of powdered sulphur, a bucket, a couple of tin saucers, and a small bottle filled with honey, or sugar will do. Then, I have already said, no wise person would ever venture abroad in the wilder-

ness without his gun and belt-knife. And now let us suppose ourselves to be searching for wild bees on a southern prairie, or *pra-a-a* as the hunters pronounce the word. Having marked a bee down upon a flower we turn the pail bottom upwards, and having poured some honey or placed some sugar, whichever we may chance to have, in one of the saucers, we rest it upon the pail, and standing some short distance away from it watch the bees. If any are very near (and their presence be it remembered we have made sure of, by first marking one or two down) they will come to the saucer, and after a slight investigation greedily help themselves to its contents. With a light cautious hand place the other saucer over the bee or bees, next dust the captives well with sulphur, and tie a small bit of any kind of white fibre to the leg of each, and let them fly. Now comes the grand difficulty, which is to keep an eye on these bees, and *line* them home. If you are not sure of the tree into which the bee went, try a second capture some distance to the right or left of the spot on which the first bees were trapped; then if the second lot flies to the same point as did the others, you are pretty safe in assuming that the bee-tree is accurately marked or 'angled.' A bee loaded or scared always takes a straight *line* for home; but if any doubt remained as to the exact tree, it would be at once dispelled by the bees themselves, for not liking their sulphur-dusted friends they swarm out and make such a buzzing that

their whereabouts is at once revealed. Having made the required discovery, provide plenty of dry sticks and moss, ready to light at a short notice, and then chop down the tree. Stand clear when the tree comes crashing down; the disturbed colony are not to be played with any longer, they have stings and will use them too, more freely than is at all times agreeable, if the sticks are not speedily lighted and moss to make a smoke thrown upon them whilst burning. A good-sized bunch of leafy branches is also useful to flog off the infuriated insects from your head and hands. The bees killed and driven off, the contents of the store, the product of these busy workers' industry, must be chopped from out the tree, and placed in the bucket. If a professional bee-hunter is honey-seeking for a livelihood, of course he would provide vessels adequate in capacity to contain all the honey and wax he might be fortunate enough to discover; and very many men do make a very capital thing of hunting bees and selling the honey and wax to settlers and to the storekeepers in small towns within reach of the prairies, whether by canoe or pack animal. To obtain the bees-wax, the honeycomb should be broken up small, and boiled in a small quantity of water, for some time; then if squeezed tightly in a coarse cloth, the wax runs through and can be collected and cooled in moulds of any desired shape. A tin pannikin is as good as any thing I know of for bees-wax to harden in.

The isolated groups of trees scattered over the prairies

are a marked peculiarity of Texan scenery. These patches have been aptly called 'islands,' and what is equally worthy of remark is, that each island consists to a great extent of a single kind of tree; one island will be composed exclusively of oaks, another of peccan trees, and a third of plums, whilst the vine common everywhere trails its tendrilled branches alike over all. There is hardly a trace of underbrush to be seen, but as the grass grows close to the very trees in these 'islands' the wild bees have their hoards in great abundance. I once remarked to an old hunter who had been much in Texas, that a friend of mine was once nearly starved on the Texan prairies.

'Why, thunder and bars,' said the old man, 'hadn't he got narry eyes?'

'Yes,' I said, 'he could see very well.'

'Than, why on airth couldn't the sucker keep 'em skinned; aint thar "islands," and aint thar "bee gums," and aint thar bees fly-in about in the ar and lightin on the pra-a-a flowers? May be he'd a seen 'em if the critturs had been as big as a "wild gobbler" or a blue chickin. Thim fellers greer from the settilmints aint got no more cuteness nor a bull-frog.' The old trapper gave a deep sigh as he thought of the degenerate individual who could go hungry to sleep on a Texan prairie.

There are a vast number of 'berries' which are not only very palatable but very nutritious into the bargain

to be obtained round most of the prairies of the Southern States, as well as on both sides of the Rocky Mountains. Of these the Service berry (*Amelanchier Canadensis*) and the Sallal berry (*Gaultheria shallon*) may be specified as being really most useful. The former berries dried in the sun are used by the Hudson's Bay fur-traders to mix with the pemmacan.

Pemmacan for those who can, as they say Transatlantically, worry it down, is a very capital material to carry, on a long march; indeed it often constitutes the only diet of the trapper and fur-trader. It may be made as follows:—Cut either deer or buffalo flesh into thin shreds, and dry it well in the sun; next pound it into a pulp between two stones, and as you pound it throw it into a bag made of hide previously prepared. When the bag is nearly filled pour in melted grease nearly boiling hot, until the bag is filled, then sew it up firmly. Many prefer to eat it as it is cut off in thin slices, others boil it with flour. I do not like it any way, and strips of meat simply sun-dried or dried over ^{not} a slow fire can easily be carried long distances without undergoing decomposition.

Edible roots too are in great variety, and serve as a valuable addition to an Indian's dietary, but unless directed by the savages I should not advise a traveller to venture upon eating any he may find for himself. I knew a case in which three men were poisoned—and all three died too—on the prairie where they dug up some

bulbs they fancied were wholesome. The inner bark of the willow is by no means a despicable substitute for tobacco, when scraped from a twig and dried; it is best dried by being scraped up in frills round the stick and held before the fire, then crumbled off and placed in the pipe-bowl. The leaves of the *Uva ursæ* are also dried and smoked in great quantities by the savages west of the Rocky Mountains, who call it kini-kin-ick. I cannot say that I like either the one or the other, but then if we cannot get what we like we must have what we can.

Many species of insects are consumed by the Indians, who devour them with great gusto. The digger Indians in California eat immense numbers of field crickets (*Acheta nigra*); the savages brush these insects, which sometimes literally cover the ground in a thick layer, into pits dug for the purpose, in the bottoms of which damp wood is smouldering; the smoke suffocates the crickets and helps at the same time to preserve their bodies from decomposition. Further south the Cicada is also dried and eaten, made into a kind of cake.

The larvæ of many large beetles that pass the larval condition in decayed wood are esteemed great delicacies by the Red people, who relish their white fat bodies as we should a lark or an ortolan.

As appertaining to the subject of food, it may prove serviceable to the wanderer, to point out *en passant* the systems at present so largely practised in South America,

to preserve vast quantities of flesh in the shape of beef and mutton, in order to render it available for transport to other countries. In the countries bordering the River Plate there are said to be 22,000,000 head of cattle and 35,000,000 sheep—valuable in South America only for their hides, horns, and fleeces.

The following three processes are found to answer the best:—

Morgan's process of salting animals by hydrostatic pressure is as follows. The process is a very rapid one. The animal is first of all stunned by a blow on the head, then laid on a frame and the breast cut open; the right ventricle of the heart punctured, and as much blood extracted as possible. This operation completed, the left ventricle is opened, and a tube connected with a reservoir twenty feet above, passed through the heart into the aorta, round which a ligature is tightly bound to prevent any reflux of the fluid, and at the same time the right ventricle is closed with a powerful spring clip. By turning a cock the brine flows for one minute and a half, at the end of which time if the tip of the ear is cut off a clear stream of brine exudes. About two gallons of brine will fill all the emptied arteries, and the pressure employed is 2 lbs. to the square inch. The carcasses are lastly skinned, cut into quarters, and, aided with powerful pressure, packed into casks. By this process not only is the flesh preserved but the skins are also salted. Great care is needed in the preparation of the brine, for

if any undissolved salt were left in it the particles would stop the smaller vessels, and consequently some portion of the flesh would not receive its proper proportion of brine. In order to obviate this, it is subjected to three different strainings.

Method of manufacturing the *Extractum Liebeg Carnis*. This is carried on at a large *saladero*, most charmingly and conveniently situated about a mile or so from a town, on the banks of the Uruguay. "The establishment, which is very large, is conducted by an English company, and that branch of it which includes the *extractum* is superintended by a German gentleman, Herr Keller, who most kindly showed us over the premises, and explained the process. In this case the animals are slaughtered the day before, and the meat being cut off, is hung up for twenty-four hours. The following morning it is put into different cylinders, where it is progressively mashed to a pulp; it is then thrown into a large cauldron, where it is boiled for a specified time with a certain quantity of water, and this part of the process extracts all the nutritious qualities from the flesh. The liquid is next let off into an ample vat, where boiling is still continued until all the grease rises to the top, when it is poured off through a pipe into the receptacles placed to receive it, and the broth (if I may so term it) is drained from the bottom. It is then put into long, shallow vats, heated by steam-pipes passing round them, and from one extremity of these vats

a strong blast of cold air is perpetually kept blowing over the surface, to assist the evaporation. The liquor, of a deep brown, is next very carefully strained, and passed into another shallow vat at boiling heat, where it is kept stirred by a man who, together with this vat, is enclosed in a large cage of close wire netting, which effectually excludes all flies or other extraneous substances. The stirring is, I presume, kept up to prevent the liquid from burning during this last stage. It is now finished, and ready to be transferred to the tin canisters in which it is exported. It takes 33 lbs. of beef to make 1 lb. of the extractum. I forget whether Herr Keller told us that its retail price was 12 francs or 16 francs per pound, but he assured us that it is most rapidly sold, and that its use is becoming very extensive in Germany. The hides and bones of the animals whose flesh is thus made use of are of course turned to the same account as those of the rest killed at the saladeros. The business carried on at this saladero is very extensive, and as many as 400 or 500 oxen are frequently slaughtered in one day. The flesh of these is principally converted into charqui, or dried beef, on which account by far the greater number of animals are killed in those months when the sun effectually performs this process after it has been salted in some degree. It is extensively used in Brazil and amongst the negroes in the West Indies, but it certainly does not look tempting to an Englishman.* Eight small tins

* Trip to South America (Land and Water), by Higford Burr, Esq.

will contain the concentrated matter of an entire ox at a cost of about 5*l*. This essence will make over 1,000 basins of soup, strong and nutritious in quality. A teaspoonful in a breakfast cup full of water forms no despicable breakfast.

Saladeros are used for various purposes of slaughter, but the manner in which they kill an ox for domestic use in South America is very remarkable when compared with ours. "The animal is singled out from the herd and lassoed round the neck, and has sometimes a second lasso round one leg; he is thus brought up to a convenient distance from the house, when a peon, armed with one of their long knives, comes behind, and hamstringing him, when, of course, the poor animal falls to the ground. In this helpless condition the peon thrusts the knife into his chest, just as a Highlander stabs a stag; and he very soon bleeds to death.

"The skin is quickly detached, but not removed from beneath the carcase, but serves to keep the meat from coming in contact with the soil. In a very short time the flesh is cut off, the joints separated, and all that is to be used carried away; the hide is then stretched out to dry, and its value is about three Bolivian dollars, or 9*s*. 6*d*. English money; the live beast may be valued at 1*l*. 6*s*. What would he not be worth if in these days of rinderpest he were but within a convenient distance of our island?"

A new process has been recently patented by Messrs.

Sloper and Paris, which, as far as I have been able to learn, is somewhat as follows.

Fresh meat is cut into joints or junks, and the bone removed; in this condition it is placed in tin canisters, having a hole in the top and bottom; from the lower hole water is forced in until the canister is completely filled, thus driving out all the air through the upper hole. This water is in its turn forced out, and as it escapes it is replaced by some gas, the nature of which the patentees will not reveal.

I have eaten meat that was prepared by this process in South America, and brought from thence to England, and can truthfully say it was as pure and free from taint or any unpleasant flavour, as beef purchased fresh from the shambles in Newgate Market.

Jerking beef is simply cutting it into thin strips and drying in the sun; small fires should be kept smouldering under the drying flesh, to keep away the flies. All the fat and bone should be removed, when the strips are prepared for drying; this sun-dried meat is called 'charqui' in South America, 'jerked meat' in North America. If properly cured it will keep good for a long time, and in this condition is easy of transport. It can be cooked or eaten as it is, or in accordance with the tastes of the consumers.

Fish of various descriptions cured without salt, form very important items in the winter dietary of the dwellers in the wilderness. I need only briefly refer to

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two of the most important fish usually so cured. Were I to specify each one so used, I should require a 'big-book' in earnest. The directions for catching and curing one or two species will apply with equal force to all others.

East of the Rocky Mountains, white fish, either dry, cured, or frozen, for the purpose of preserving them, are largely consumed both by the Indians and fur-traders. The fish so eaten is named scientifically, *Coregonus albus*; to the traders it is known as the Attihawmeg or Reindeer of the sea. In summer these fish are taken in traps and nets of all sorts; during winter in gill-nets set underneath the ice.

A gill-net may be made any length, from ten fathoms to sixty; holes are dug through the ice at short distances from each other; the net suspended from these holes is kept tightly stretched by heavy sinkers; the fish swim against it and get entangled by the head and gills in the meshes. The fish freeze immediately on their removal from the net, and are thus stored away for general use as long as the cold weather lasts.

West of the Rocky Mountains salmon in a great measure take the place of the white fish.

As far south as San Francisco salmon are tolerably numerous, running up the Sacramento, Klamath, and other large streams; but proceeding north, we reach the mouth of the Columbia river, and from this point through the Straits of Juan de Fuca to Fort Simpson

(beyond the north end of Vancouver Island, on the mainland), the salmon form one of the most prominent wonders of this region.

Salmon arrive in great numbers at the mouth of the Columbia about the 1st of May, and a little later at the Fraser and streams further north.

On the Nanimo river the Indians have a most ingenious contrivance for taking salmon. They construct a weir across the stream, and, instead of placing basket traps, they pave the river bottom with white, or light-coloured stones; this pavement is always made on the lower side of the weir, and leads to an opening in the wicker; a stage is erected between, or near these paved ways, so that Indians lying on the stage can see in an instant if a salmon attempts to ascend over the white paving. A long spear, barbed at the end, is held poised, in readiness, and woe betide the adventurous salmon that runs the gauntlet of this perilous passage. But the most ingenious system I have ever seen practised is employed at Johnson's Narrows, near the Nimkish river. Salmon readily take a bait in salt water. The Nimkish Indians provide a spear about seventy feet in length, together with a shorter one having a barbed trident end, about twenty feet in length; two Indians paddle along in a canoe, and when on favourable fishing ground moor it. The one having the long spear is likewise provided with a small hollow cone of wood, trimmed round its greater circumference with feathers like a

shuttlecock ; this cone he places on the end of the long spear, and depresses it under water until down the full length of the spear ; then a skilful jerk detaches this feathered cone, and it wriggles up through the water like a struggling fish. The savage with the short spear intently watches the deceiver—a salmon rushes at it, when, like magic, he transfixes it with the spear.

In June and July the great 'run' begins, and the numbers of salmon that ascend the various streams, is beyond belief to any one who has never seen them. In some of the tributaries to the Fraser river, the Chilukweyuk is an instance—a perfect mountain torrent—the salmon throng up in such myriads, that it is next to impossible to throw in a stone without hitting a fish. The spring salmon keep to the larger streams, and seldom enter the tributaries until they get a long way up from the sea ; these spring fish reach the salmon falls at Colville, in June, distant about 1,000 miles from the sea. This salmon is the *Salmo Quinnat* of Sir J. Rich, F.B.A. ; in Chinook, 'tyhe, or chief salmon ;' Colville Indian, 'Se-met-leek ;' Yakima Indian, 'kwin-na-to ;' Nisqually Indian, 'satsup.' It is beyond doubt the finest salmon obtained in the rivers and inlets of British Columbia. The colour of the flesh is the most delicate pink, the general appearance bright silvery and metallic, the dorsal region having a tinge of greenish-blue. Commercially, it is, too, by far the most valuable salmon, and very large quantities are salted

and barrelled by the Hudson's Bay Company at Fort Langley upon the Fraser. During the season the Indians on the Columbia, Fraser, and, indeed, on all the principal streams, take immense quantities of these salmon, and prefer them to any other species for drying and winter use. At the cascades on the Columbia, and on the Fraser river, the method of taking salmon is with scoop-nets. The salmon keep close to the shore, to avoid the more rapid current, and to take advantage of the eddies to rest in during their upward run. The Indian builds, or rather hangs, a kind of stage over the water, and lies upon it, armed with a net like a shrimping net, about four feet diameter, fastened to the end of a long pole. He passes this net *down* the current, and allows it to be swept on as far as his arms can reach, then he hauls it out and plunges it in again up stream as far as possible. In this way I have seen a savage take thirty-five to forty salmon an hour. They usually fish immediately after sunrise, or late in the evening. At the north of the Fraser river and on Puget Sound, the Indians employ long poles, with sharp gaff-hooks at the end of them, then, paddling about in canoes, thus hook in large numbers of salmon. Higher up the streams, at the salmon falls or leaps, the Indians use huge wicker baskets, flat on one side and bellied out on the other; these they hang in places where they well know the salmon leap; usually against the face of a rock, the flat side of the basket being towards the rock.



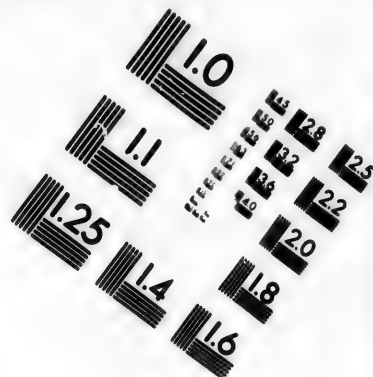
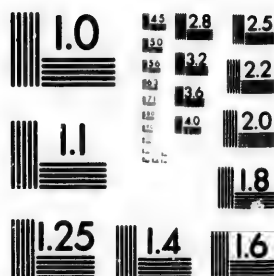
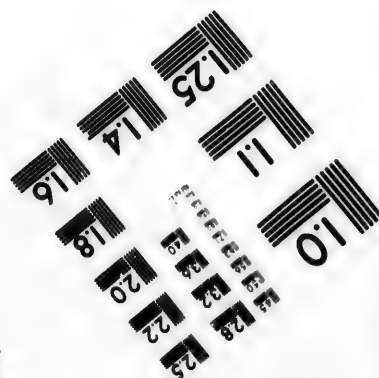


IMAGE EVALUATION TEST TARGET (MT-3)



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These baskets are hung before the river begins to flood from the melting snow, for the Columbia rises at least thirty-five feet above its autumn and winter level. As soon as the water has risen sufficiently for the fish to leap the falls, at it they go, and in leaping often fall back into the baskets. I have seen from 250 to 300 salmon taken from out one basket two or three times a day. I have likewise seen over a hundred salmon in the air at one time, and often six or eight tumble into a basket together. Two Indians go naked into this huge pannier, each carrying in his hand a heavy wooden club, and, utterly reckless of the water dashing over them, and scrambling about amongst the struggling fish, they seize one after another by the gills, give each salmon a crack on the head with the club, then fling it out upon the rocks, whereon the squaws are waiting; the women pounce upon the stunned fish, lug them away, cut off their heads, split them open, take out the backbones, and then hang them upon long poles to dry, keeping a small fire always smouldering underneath the poles to partially smoke the drying fish. Salmon cured in this way I have known to keep two years perfectly sound.

It is curious the Columbia salmon never take a bait after they leave the *salt* water. I have tried every expedient I could think of to tempt them, but always without success; and from careful inquiries made of the different tribes of Indians on both sides of the cascades, and from the officers of the Hudson's Bay Company at the various trading posts, I am quite sure salmon are

never taken with bait after they leave the sea. But in the sea, before entering the rivers, I have seen this species of salmon (*Salmo Quinnat*) caught by the Indians with the greatest ease by trolling for them. The line is made of seaweed, smoked and then knotted together; a large pebble about 4 oz. in weight, slung about six feet from the hook, acts as a sinker. The savages at one time used a wooden hook with a bone barb, but now they get supplied with steel fish-hooks by the Hudson's Bay Company. The bait employed is a small fish, usually a herring or anchovy. The line is made fast to the canoe paddle, just above the hand-grip, and the act of paddling gives to the bait the necessary jerking motion. The time chosen for trolling is about two hours after the sun rises, or two hours before it sets.

Water is an essential neither man nor beast can do without, and although it is generally procurable in great abundance in the wilderness, to which wanderers in search of a home mostly bend their steps, nevertheless there are localities in every country, where want of water may sadly inconvenience the traveller, hence a brief description of a few of the systems resorted to by the inhabitants of different countries, for the obtainment and conveyance of water, may be acceptable, and let us hope useful.

Explorers inform us, in some parts of South Africa the Natives are frequently compelled to drink the fluid contained in the paunches of animals, to allay their thirst.

Mr. Darwin tells us of a people, who, catching turtles,

drank the water that was found in the pericardia, or heart sacks, 'and which was quite pure and sweet.'

The Arabs in crossing the deserts use a large leathern flask, 'Zemsemmere,' which they convey, hung on the shady side of a camel.

The Bushmen in South Africa employ ostrich eggshells, which they fill with water, and bury at convenient distances for the return route.

For packing water on mule or horse-back, strong kegs are very convenient, holding about fifty pounds each.

Stagnant water should always be filtered and boiled before it is drank, otherwise fever and dysentery are very likely to be produced. A very good temporary or make-shift filter may be constructed by pouring the muddy water through a tuft of grass, bound together tightly.

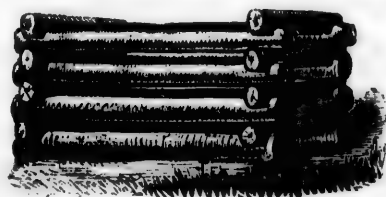
The tracks of animals and the course of birds are good signs to note when the wanderer is in search of water. I believe I once saved my own, and several men's lives, by following the tracks of Prongbuck to their drinking places. We had been searching in vain for water on a sandy desert, until we were all nearly famished with thirst, and had almost abandoned every hope of finding a stream to camp by, when I struck the antelope tracks, which led directly to a small brook completely hidden in a rocky ravine. Animals when going to drink almost invariably proceed in single file, hence trails leading to water are usually well beaten and very narrow.

CHAPTER XVII.

A Puzzle for a Carpenter—To Build a Log-house without Iron Split-Shingles—Put on the Roof—Make Door and Fireplace—To make a Door, Fireplace, and Chimney—Log Quarters of the Boundary Commission—Effects of Cold—A Caution to be remembered—To procure a Light from two pieces of Wood—Getting a Light with a Gun—How to carry Lucifers.

DIRECT a carpenter to build a house; he is only to have as tools an axe, an auger, and a knife; he is not to use a nail, hinge, screw, or iron of any kind, and yet the door is to open and shut, latch, and accomplish all that an ordinary door is expected to do; he is to let in light, and at the same time keep out wet, without the aid of glass; he must roof the house, and make a fireplace and chimney entirely with wood, so as not to catch fire or allow the smoke to come into the room; the only building materials at his disposal are to be trees growing near the site of the intended house. Do you not think he would pronounce it an impossible task? Nevertheless, lumberers, settlers, and practised wanderers have to manage it. Like most other things, it is easy of accomplishment when once you know how to go to work. I presume the previous directions as to how an axe is to be used have been put into practice. First stake out the square or other shape you intend making

your house, having previously satisfied yourself that the trees round about are suited to your purpose and that a constant supply of water is near by, a precaution the ancient Romans never lost sight of. Then calculate, by taking the average circumference of the trees, how many you will require to fell so as to make a wall seven feet high when the trunks are laid upon one another. Ply your axe, chop down the required number of trees, trim them and lop off the tops, leaving the trunks the length you want them; the next process is that of rolling these logs to the site of the shanty, which can be accomplished easily if a long handspike is employed. This done, lay four of the largest logs into a square, (we will suppose this to be the shape of the house), then by



FRAME OF A LOG-HOUSE.

using long sticks placed slantwise, as 'skeds' are adjusted to wagons, get four other logs upon the foundation logs. It will be necessary, in order to roll up the logs, as the height of the wall increases to have them of a less circumference, in order to diminish the weight; this, however, must depend upon the number and strength of the builders, or builder, if only one is at work; it is better to cut notches in the lower logs for those above them to drop into; it makes the building firm, and leaves less space open betwixt the logs.

Now stand upon the topmost log, and chop out

a piece from it 2 ft. 6 in. long, and so on, log after log, until the bottom one is reached; this one must be only cut half-through, and the half split out; this done, roll up one more log, and your doorway is finished; if you did not axe out the entrance at this stage of the building, you could not do it at all. In one end of the house chop out another opening precisely in the same way, only three feet wide; this is for the fireplace. Having got the walls up, the hard and laborious part is over. Roofing is the second stage in the proceeding; rafters must be trenailed together and arranged precisely as they are in a stone house, which is to be either tiled or slated, but in lieu of tiles or slates shingles are used in wild countries. Shingles vary in size, but fourteen inches by eight inches will be found to answer well. To make them, a cedar tree must be felled and axed into lengths of fourteen inches; to get a shingle eight inches wide the tree ought to



SPLIT LOG FOR MAKING SHINGLES.

measure forty-eight inches in circumference. Split your lengths into four pieces of equal size, remove the bark, and then, by employing the axe as a wedge and driving it with a log of wood, it becomes an easy job to split off thin slabs from the faces of the four pieces of cedar. These slabs are called shingles, and if properly put on form a roof quite as secure as if it was made of

slates (parenthetically it will be as well to say that shingles are usually split with a tool made on purpose, called a 'frau,' which in shape nearly resembles the knife used for cutting hay into bundles; commercially, and where there is a large demand for shingles, they are made by machinery and sold by the thousand). To shingle a house when you have no nails, begin at the bottom of the rafters, and let half the shingle project over, in order to carry the rain-water clear of the wall, exactly in the same way as an ordinary house is tiled. Fasten this row by trenailing a light piece of wood at each end, so that it rests firmly on the row of shingles. Following up this plan, let row follow row until the ridge of the rafters is attained, finish the opposite side and ends in the same way, and your house, if you are anything of a carpenter, has a waterproof roof.

The door can be easily constructed of rough plank, split from off a cedar log in the same manner as the shingles were, only the log must be as long as the plank you require. These planks are then to be trenailed together by means of cross-pieces; one hole must be bored in the half-split lowermost log, and another in the uppermost log, for two pegs to work easily in, which pegs are to be fastened to the top and bottom of the door. This plan makes a capital substitute for an iron hinge. Any ordinary amount of ingenuity will be equal to designing a latch. A fireplace I have always found to answer remarkably well is made in this way. Measure about five feet from

the logs forming the end in which you have axed out the place for your fire; cut as many light poles as you think you may require, each pole to be considerably taller than the ridge of the house when one end is placed on the line five feet from the logs and the other slanted against the log-house. Commence by placing one of these poles close to the lower log of the house on one side of the opening. Of course, the first pole will be vertical, and as the distance from the house increases slant the poles as you place them towards the point or angle of the gable. Continue this arrangement along the measured line, and finish at the log on the opposite side to that at which you commenced. You have now enclosed your fireplace, and by fastening the upper ends of the poles first firmly together, and then to the apex of the gable, you will find a capital chimney has been constructed. About six inches from the bottom of this semicircle of poles, on the inside drive in several pickets, the height of which, clear of the ground, should be quite four feet. Next wreath in betwixt these uprights a 'wickey' or basketwork of light twigs and sticks, and it should be woven close and firm. This operation completed, you will have to turn mudlark for a short time, and mix well together a good thick muck, composed of clay, sand, small shingle, and water. It must be so thick as not to run through the basketwork, and yet thin enough to settle and pack well together; next fill in the space between the basketwork and the

poles with this compo, and work it well down with a tamping stick, so that no cracks or hollow spaces are left; then let it settle until you have completed the other parts of your house, which may be floored with rough plank if you are of a luxurious turn, or left only with the bare earth. A good trench should be made round the house, if you have the tools to do it with; a small bench will be found convenient as a table, and for seats chop logs the length best suited to your taste. When I have no glass I admit light by raising one or two shingles in the roof, working them up and down by means of a bit of hide pegged on, like the hinge boys usually employ for rabbit hutches. If it rains, all that is needed is to nearly close the shingles; the slant is then sufficient to run off the wet. I do not think I need go into any further detail, because there are numberless minor matters which can, and indeed must be left to the ingenuity of the wanderer. One who has a turn for carpentering will, as a matter of course, construct a better house than another not so gifted. The work of building completed, light your fire, by first placing two logs at a short distance from each other, and a third log at the back; build in your wood between them, and light it; as you keep your fire burning day after day, the compo gradually dries and hardens, but the wet for some time will keep the basketwork from catching fire; by and by, however, it begins to burn, and when consumed leaves you a regular concrete back

to your fireplace, which, if well made and properly packed, becomes as hard and durable as fire-brick. This kind of fireplace answers admirably, and if the poles are properly slanted, and carried sufficiently high above the house, the smoke is carried up by a draught that keeps the fire burning briskly, and gets rid of the nuisance wood smoke always causes when it escapes into an enclosed space.

I need hardly say, that where tools and proper labour are to be obtained, log houses can be built quite equal to those made of stone or bricks, but as these are matters which do not apply directly to the wanderer, it would only occupy time unprofitably to give instructions as to the systems of building these more elaborate edifices. The Commission were all wintered (for two winters) in log-houses built on the banks of the Upper Columbia River. In the construction of these log-houses we employed sun-dried bricks for making the fireplaces and chimneys, which answered perfectly, and we burnt lime to make mortar for building and for filling in the spaces between the logs of the houses. Of course we had glass and nails, and tools of all kinds, besides having men who were regular carpenters. We had also blacksmiths and workers in every description of handicraft. Hence we were enabled to build very complete houses, for stores, dwelling places, and large rooms for mapping. The cost of this log-camp was very heavy, because labour was dear, and rations most costly, in

consequence of the distance provisions had to be brought by pack animals, from the nearest water communication. The men and officers enjoyed admirable health during the winters, although the temperature was often down to 32 deg. below zero; the ink froze so quickly in the pens that writing was next to an impossibility, and I have frequently seen the contents of a pail which was filled with water and placed close to the fire in my shanty become solid ice in a few hours; yet as long as the air was calm and no wind blew it did not appear to the senses unusually cold. I may mention one little matter as a caution to be remembered in very cold weather—never put an iron bit into a horse's mouth without previously warming it; very cold iron or steel acts much in the same way on animal tissues as it would do if at a white heat; the bit takes the skin off the tongue of the horse in an instant.

I told the wanderer just now to light his fire when he had built it. This is not at all times quite so easy a job as it appears to be to us, who have lucifer matches at $\frac{1}{2}$ d. a box. The savage has no steel or iron to strike sparks from by using a flint; still he manages to light a fire with the same material he burns. I had again and again read about the savage procuring a light by rubbing two sticks together, but for the life of me I could not tell how it was possible until I saw it done. You might continue to rub two pieces of dry wood one against the other, without kindling them, until your hair

turned grey, or you froze to death. It is not in this way the Indian manages; he takes a round piece of wood and a flat piece; the former he tapers to a conical shaped point, in the latter he scoops out a hollow place a trifle larger than the cone; laying the flat piece on the ground, and, placing his feet firmly upon it, with his hand he rapidly rotates the end of the stick in the hollow place, by rubbing it between his palms, and at the same time pressing it firmly down. Very soon the dust thus rubbed off begins to smoulder, and at last ignites. This burning dust is next placed in dry bark or moss, and carefully blown by the breath into a flame. Cedar wood is best, but it must be very dry, sound, and free from knots. Any one can thus procure a light, if wood is to be obtained fitted for the purpose, but you will find it takes some practice to give the stick a rapid rotation, and to make at the same time a due amount of pressure. It is at all times easy to obtain a light, if you have a gun, gunpowder, and caps, or a flint lock does as well. The best plan of proceeding is to tear up a small quantity of the inner bark of a fir or cedar tree into fine threads, place a small quantity of gunpowder in the palm of the hand, slightly damp the bark, or whatever the material may be you are going to employ, and then rub it well in the powder. Ram this very lightly into the gun, build a little heap of the driest material you can find (dry material for kindling can be generally procured from the under sides of fallen trees, if

it is rainy weather, or take the inside bark). Then if the weather is wet, cover your heap with a slab of bark. Now stand a few yards off, and fire your gun into the heap; you will in all likelihood find the bark-wad smouldering; blow it carefully into a flame, and then the rest is easy. Flint and steel are very good in their way, but the grand difficulty is to keep your tinder dry.

If I can possibly procure lucifer matches I invariably use them in preference to anything else, and by exercising a little care and strict economy it is wonderful how long you can make a large metal box full of matches last. The best plan of carrying them is in a tin, or metal box of any kind; this box should be always rolled up in a long strip of dressed hide and tied firmly; packed in this way you could not make the matches wet, even by soaking the package in a river. As a rule, I am not favourably disposed towards any of the machines—and their name is legion—for procuring instantaneous light; they are pretty sure to get broken, or escaping that contingency, the material composing them soon wears out, and of course cannot be replaced; my advice is, have nothing to do with such useless toys.

CHAPTER XVIII.

Mosquitoes—Sand-flies—The Breeze-fly—The Trumpet-flies—Jack-Spaniards—Stone-Wasps—Rattle-Snake Bites—A use for the Rattle—The Trap-door Spider—The Deer-tick—Leeches in the Mouth.

THE tiny insect called by the French *maringouin*, or *cousin*, by the Germans *Stechschnacke*, or *Gölse*, by the Americans *Punkees* and *mosquito* (little fly), its representative in our own country being the knat, belongs to the order *Diptera* (having two wings). Individuals of this species, so numerous as to be scattered over both hemispheres, from pole to pole, are all vicious and blood-thirsty.

To those who have never visited the home and haunts of these pests I say,—you know nothing at all about insect persecution; neither can you form the faintest idea of the terrible suffering foes so seemingly insignificant are capable of inflicting.

Whether amid the regions of eternal snow, or beneath the scorching heat of an eastern sun, strange as it seems, these tormentors are met with, always lively, invariably hungry. I certainly was vain enough to imagine I had endured as much misery in the course of my

wanderings as it was possible for mosquitoes to inflict; how sadly I was mistaken the sequel will show.

In the summer of 1858 we were engaged in cutting the Boundary-line along the low and comparatively flat land, that lies between the seaboard and spurs of the Cascade mountains; our camp was on the Sumass prairie, which in reality is simply an open patch of grassy land, through which numerous streams wind, emptying themselves into the Fraser river, by a short swift stream named the Sumass river.

Any settler who might chance to visit this spot in the spring, would never dream that in July the prairie is completely under water, and in ignorance, might ply his axe, run up his log shanty, and quietly settle down to establish his home in the wilderness where all gave cheering promise of fertile acres. How astonished he would be, on awakening some morning, to find that his land of promise was changing rapidly into a navigable lake, and his shanty, like a raft, floating away! But such would be his fate; and thus it comes about. When the snow melts upon the hills, the Fraser rises with great rapidity, dams back the Sumass, reversing its course, so that it flows *into* the Sumass lake instead of *out* of it, fills it up as you would fill a basin. Overflowing the banks it floods the prairies, converting into an immense lake what was a few days before a grassy expanse.

On the subsidence of the waters our tents were

pitched on the edge of a little stream, threading its way through this prairie. Towering up from one bank of the streamlet rose the Cascade mountains, densely wooded with pines and cedars; to the right lay the tranquil lake; to the left, and in front, for about two miles, the green prairie, bounded by the Sumass river, that wound like a silver cord round the base of a distant hill. Wild fowl were in abundance, the streams were alive with fish, the forest stocked with deer, whilst the mules and horses were knee deep in luxuriant grass.

The first week passed pleasantly away, then the mosquitoes began to get troublesome. In my own mind, I must confess to entertaining a suspicion that they were more to be dreaded than my companions were willing to believe, inasmuch as the crafty Redskins had erected rude stages, by driving stout poles into the bottom of the lake, and then fastening other poles to them; to these platforms they all retired on the first appearance of the mosquitoes. My suspicions were confirmed—in about five days the increase was something beyond belief, and really terrible as they hovered over and about us in dense clouds. Night and day the hum of these blood-thirsty tyrants was incessant; we ate them, drank them, breathed them; the thickest leather clothing scarcely protected one against their lancets. With trousers tied tightly round the ankle, and coat sleeves round the wrist, the head

enveloped in a gauze bag, hands in gloves, and feet in shooting-boots, we lived and slept, or rather tried to do so. Lighting huge fires, fumigating our tents, trying every expedient we could think of, was all in vain, the mosquitoes seemed happy in a smoke that would have stifled anything else that was mortal; and, what was worse, they increased in number daily.



AMONGST THE
'PUNKERS.'

Eating or drinking, attired as we were, required an immense amount of ingenuity, first dexterously to raise the net, and then deftly throw the wished-for morsel into the mouth; the slightest bungle or delay in restoring the covering, and a torrent of mosquitoes gained admittance, causing insufferable agonies.

Human endurance has its limits; the most patient get rebellious at being flayed alive. It was utterly impossible to work or write, one's entire time being occupied in slapping, stamping, grumbling, and savagely slaughtering mosquitoes. The human face divine rapidly assumed an irregularity of outline, far from consonant with the strict lines of beauty; each one looked as though he had gone in for a fight and lost it. The unfortunate mules and horses, driven mad, raced about wildly, dashing into the lake, out again, then trying the shelter of the willow-trees, and rolling

on the grass in very agony; but all was of no avail; go where they would, do what they would, their persecutors stuck to them in swarms. The dogs, howling piteously, wandered up and down restless and wretched, until, guided by a wise instinct, they dug holes in the earth as a *dernier ressort*; then, backing in, lay with their heads at the entrance, shaking their ears, and snapping angrily at the ravening legions, anxious and ready for an immediate assault.

To endure any longer such ceaseless persecution was impossible; officers and men began to show symptoms of fever, the result of want of sleep, and irritation arising from mosquito bites. To withdraw into the hills and abandon the work until winter was the only alternative. We were fairly vanquished—the labour of a hundred men and as many mules and horses put an end to by tiny flies.

Tents were struck, the mules packed, the survey suspended, and a general exodus effected. The only thing that in any degree quelled the mosquitoes was a breeze, a relief we seldom enjoyed, a temporary respite when it did come; the enemy, seeking shelter in the grass, returned when the wind lulled, more hungry and importunate than ever.

The specimens brought home turn out to be a new species (*Culex pinguis*), its specific name being given in honour of its obesity. Why the Sumass mosquito should be fatter than any of its known brethren I

'ken' not; and it is equally a puzzle to discover what they feed on when there are no men or animals.

The habits of *Culex pinguis* are very nearly like to those of other well-known species. The female, hovering over a pool, deposits her eggs in the water. The eggs are long, oval, and buoyant, and each female produces about three hundred in number. With her hind legs she manipulates the eggs so as to get them side by side, in a vertical position; then, with an adhesive excretion, with which nature has supplied her, glues them together; in this form they are just like a raft floating and drifting on the surface. At first the colour is white, changing in a few hours to green, and subsequently to a dull grey. If the sun is hot the larvæ come out in about four days, swimming, on their emergence from the egg, with great ease and rapidity, often diving to the bottom, but rapidly returning to the surface to breathe. The respiratory or breathing organs are situated near the tail, on the eighth segment of the abdomen; hence their position in the water is invariably head downwards. After shifting the skin three or four times, the pupæ form is assumed, during which state they still move about very actively, assisted by the tail and two strangely fashioned organs, similar to paddles attached to it. In this stage of their existence they never feed—(one would almost be tempted to wish this condition a permanency), and although still maintaining a vertical position in the water, it is

reversed, the head being uppermost, as the breathing organs are transferred to the chest.

In about a week the final change into the winged stage of its existence takes place, a process clearly evidencing a wise provision to obviate the risk of drowning; for the element in which its previous life was passed would be at once fatal to it when endowed with wings, and fitted for an aerial sojourn. The pupa case, as it floats near the surface, splits from end to end, and, looking somewhat moist and crumpled, from being so closely packed, the tiny fly creeps out and floats on its previous wrapper, thus suddenly transformed into an exquisite canoe of nature's own contriving. A breeze rippling the water ever so slightly may now cause instant shipwreck, suddenly terminating an existence scarcely commenced. Should it be sunny and hot, the wings rapidly dry, and, bidding a long and lasting good-bye to its frail barque, the mosquito flies to the land, to commence and carry on the war of persecution.

Endowed with an instinct of self-preservation, mosquitoes seldom venture far over the water after once quitting their raft—a fact the wily savage turns to his advantage. Rarely can an Indian be tempted ashore from his stage during mosquito time; and when he is, he takes good care to whip out every intruder from his canoe before reaching the platform. These quaint-looking scaffoldings, scattered over the lake, each with

its little colony of Indians, have a most picturesque appearance. Fleets of canoes are moored to the poles, and the platform reached by a ladder made of twisted bark.

To avoid being devoured, and to procure the sleep requisite for health, I used very frequently to seek the hospitality of the savages, and pass the night with them on their novel place of residence. Not that one gained very much by the exchange; if uneasy dreams or indigestion begat a restless desire to roll about whilst sleeping, the chances were that a sudden souse in the lake would be the consequence. Perfumes pungent and varied, constantly regaled the olfactory organs; not such as the night breeze wafts over the Bosphorus or bears on its wings from tropic isles. Dogs, the sharers of the Indian's bed and board, are also tenants of the platform; favourites not exempt from persecutors, that have a decided *penchant* for the blood of the pale face, though unseen and unheard, soon make their proximity painfully apparent; these annoyances, together with groans and nasal music, render a night on an Indian stage anything but 'sleeping on a bed of roses.'

I have tried every expedient my ingenuity suggested: mixtures, lotions, washes, ointments; but nothing I have ever used will cure mosquito punctures. There are few expedients, which come under the head of palliatives, worth trying; but all that one can hope to accomplish is in some degree to allay the fiery itching, that fairly scorches the skin, as the knobs surrounding the punc-

tures swell into miniature mole-hills. The best thing I discovered was water, used as hot as it was possible to bear it; plunging the hands into it, and applying saturated cloths to the face and head, afforded very delightful, though only temporary, relief: but a minute's respite from misery is worth obtaining, when it can be had at the cost of a little trouble.

The Indians believe in the efficacy of vermilion, a material they trade from the Hudson's Bay Company. An officer belonging to the Boundary Commission, during the work, was one day 'en route' to an outpost camp, having for a guide an Indian lad; the mosquitoes were in legions, and my friend's hands and face commenced to swell rapidly. The Red-skin guide very kindly took him to a lodge and pointed out his sufferings; the squaws at once set to work, and painted every knob with vermilion; he told me that it afforded him indescribable comfort and ease; but it most assuredly did not improve his personal appearance; he was the most singular sight I ever beheld, and I cannot think of anything to which I can compare him except to Zamiel or a clown in plain clothes.

Rubbing in soft fat is also a good plan to allay the terrible ceaseless itching.

The British Columbian mosquitoes one would be disposed to think must be very closely allied to the mosquito family 'The Ranger' (Captain Flack) speaks of in his Texan hunting experiences.

'Arkansas is a state without a fault,' said a native.

'Excepting mosquitoes,' exclaimed one from another state.

'Wall stranger, except for them ; for it ar' a fact they are *e-normous*, and do push themselves in rather troublesome. But they never stick twice in the same place ; and give them a fair chance for a few months, and you will get as much above noticing them as an alligator. But mosquitoes is natur', and I never find fault with her. If they ar' large Arkansas is large, her varmints ar' large, her trees ar' large, her rivers ar' large ; and a small mosquito would be of no more use than preaching in a cane-brake.'

More diminutive, nevertheless quite as formidable in its sanguinary onslaughts, is the burning-fly, brulot, or sand-fly of the trappers and fur-traders. The male sand-fly is not a blood-sucker, but lives on flowers, sipping the nectar in indolent enjoyment ; whereas what should have been the gentler sex are, like the Dahomean amazons, the sanguinary spirits of the tribe. The sand-fly is very much smaller than the mosquito, and, instead of being a genteel *blonde*, Madame Brulot is black as an African negress, with a short dumpy body, and wings, when folded, twice the length of the lady herself. Her mouth is not attractive, being a bundle of sharp blades, the sheaths forming tubes through which the blood is sucked. As the barbed stilettoes do their work, there is instilled into the

puncture an ichorous fluid, causing the most intense irritation. Where the sand-fly lays her eggs is rather a doubtful matter, although it is more than likely they are attached to the stems of water plants, as the larva is easily discovered holding on to them, just below the surface of the water. It is a long, ugly-looking grub, divided into twelve rings or segments; the second pair of feet, being prehensile, are used for holding on to the plants. When undisturbed it is somewhat active, and moves about briskly; but, touch it ever so slightly, and it stiffens itself, hanging by the feet like a bit of dead rush. The larva having attained its full growth, spins for itself a delicate silken bag, in which it changes to a pupa; the bag is invariably spun the long way of the stalk to which it is affixed, and the top left open, so that the pupa, being in an upright position, pushes its head a little way out of the bag. From this head four hair-like filaments project like horns; these are breathing organs. About the end of June the pupa changes into the little fly, which bursts from its sarcophagus and starts on its aerial flight.

Here we shall find a contrivance totally differing from the mosquito boat, yet equally effective in aiding the newly liberated captive to escape drowning. The end of the silken bag being open, the fly easily creeps out, not into the water, but dragging with it a minute silken balloon—a sort of inner lining to the pupa case. In this little balloon the fly ascends through the

water to the surface, then, bursting its slender walls, spreads its wings, and, with a hum of delight, goes away to revel in the sunshine amidst the trees and flowers.

But one never thinks of these wonders when fairly in the strongholds of the sand-fly. To illustrate the torments they are capable of inflicting, I shall briefly describe a journey the misery of which will never be forgotten.

Our route lay along the banks of the Upper Columbia to reach the Spokane river. Flowers in profusion peeped up from amongst the grass; birds were busily employed in every tree and bush. The air was heavy with perfume; whilst the insects, as they tumbled from flower to flower, buzzed a continuous song of satisfaction. Nothing could have been more enjoyable, had not clouds of sand-flies filled the air, stirred up by the feet of the mules and horses as they tramped through the grass. They pounced upon us at once, and covered the animals so thickly that they looked quite black. Plunging, kicking, and rolling on the grass with their loads, was of no avail. Unlike the bite of a mosquito, that left only a lump, blood trickled from every puncture of the sand-flies' lancets. They whirled round our heads like angry bees, savagely attacking every available spot. We picked large bunches of twigs, and by lashing and slapping, tried, though vainly, to drive away our assailants. My heart was really grieved at

the sufferings the poor animals were obliged to endure, spite of every effort to rid themselves of their pests.

One mule grew fagged and weary; and in that condition neither force nor persuasion is of the slightest use to induce it to move. The only thing you can do is to unpack him, and either leave the load in the trail with the tired animal, or distribute it amongst the other mules. The tired mule was unpacked, and, with his load, left on the trail; camping very soon after, two packers and a spare mule were sent after him. Short, however, as the time and distance were, it was only with immense trouble the packers managed to get him back to camp. A sight so pitiable as the poor beast presented I never beheld; he was covered, from head to hoofs, with sand-flies. The little harpies looked quite pink, their skins being so distended as to reveal the colour of the fluid they were gorged with. No one could have recognised the animal as a mule, so fearfully was it swollen from the poisoned punctures. We bathed, smoked, and greased him to relieve his sufferings, but to no purpose: about two hours after reaching the camp poor mulo was no more! Who could have dreamed that such pigmies would have killed a powerful mule in two or three hours?

'With caution judge of possibility;
Things thought unlikely, e'en impossible,
Experience often shows us to be true.'

One mode of protection is to light large smouldering

fires, so as to produce clouds of smoke; this the *brulots* dislike; the animals know it, and, crowding round the smoking logs, struggle and quarrel as to which shall be nearest. This method is adopted by Indians; and one may always know where Indian horses are grazing by the clouds of smoke ascending from the burning logs.

During night sand-flies trouble but little: like sensible insects, they sleep like the rest of the world. *Brulot*, or *burning* fly, is a most appropriate name for this insect, as the puncture it makes is as if a red-hot needle was thrust into one's flesh. Sandy soil, and lots of water, being essential to their multiplication, they are necessarily confined to particular districts. Bad as these flies are, I still maintain mosquitoes are worse. The *brulots* do indulge in a short repose; but mosquitoes never wink their eyes, and are ever on the move.

Bruce, in his 'Travels in Abyssinia,' describes a small two-winged fly, called the *zimb*, or *tsaltsalya*, unquestionably belonging to the *Tabanidæ*, or breeze flies, that drives every living thing from the districts it infests. He says: 'Small as this insect is, we must acknowledge the elephant, rhinoceros, lion, and tiger vastly its inferiors. Their very sound occasions more trepidation and disorder, both in the human and brute creation, than whole herds of the most ferocious wild beasts. As soon as their buzzing is heard the cattle

forsake their food and run wildly about the plain until they die, worn out with fatigue, fright, and hunger. No remedy remains for the residents on such spots but to leave the *black earth*, and hasten down to the sands of Albara; and there they remain while the rains last. Camels, and even elephants and rhinoceroses, though the two last coat themselves with an armour of mud, are attacked by this winged assassin and afflicted with numerous tumours. All the inhabitants, from the mountains of Abyssinia to the confluence of the Nile and Astaboras, are once a year obliged to change their abode and seek protection on the sands of Beja; nor is there any alternative or means of avoiding this, though a hostile band were in the way, capable of spoiling them of all their substance.'

From this description, says the Marquess de Spineto, in the 'Philosophical Magazine,' 'it seems evident that this terrible insect must have been the fly that formed the fourth plague of the Egyptians, and which, in the language of Scripture, "would put a division between them and the Israelites," and sever the land of Goshen, where the cattle dwelt, from the land of Egypt.'

This land, the possession of the Israelites, was a land of pasture, neither tilled nor sown, because not overflowed by the Nile; but the land inundated by that river was the *black earth* of the valley of Egypt; and, as the zimb never leaves the black earth, it followed

that no fly could be seen in the sand or pasture of the land of Goschen, because the kind of soil had ever been the refuge of the cattle, emigrating from the black earth round the Nile to the lower region of Astara. The prophet Isaiah (vii. 18, 19) has given an account of this insect and its manner of operation: 'The Lord shall hiss for the fly that is in the uttermost part of the rivers of Egypt; and they shall come, and shall rest all of them in the desolate valleys;' or, in other words, the fly shall cut off from the cattle their usual retreat, by taking possession of those places of refuge to which they resorted. There are invariably found two hieroglyphics at the top of the cartouche which incloses the mystic title of the Pharaohs, a crooked line and the figure of an insect; and it is more than probable that this fly, or some species near akin to it was the prototype of the Philistine idol, the god of Ekron, worshipped in the form of a fly, under the name of *Baulzebub*, which means literally the fly of Baal, or, according to the Hebrew, *lord fly*.

A small sand-fly, *Simulia Columbaschensis*, plays fearful havoc amongst the people and their four-footed companions in the neighbourhood of Columbaz, in Servia. They have a tradition there that the flies are all bred in caves near the ancient castles of Columbaz, and at certain periods they issue from the mouths of these caves like a thick smoke. It was in these caverns, so say the Wallachians, that St. George killed the

dragon, and these insects, they assert, are hatched from its still undecomposed remains; whereas the real fact of the matter is that the flies simply retire into the caves to avoid wind or rain.

Dr. Livingstone gives an account of a fly called the tsetse (*Glossina morsitans*), not larger than a house-fly, brown, like the honey-bee, but banded with yellow, a puncture of which is as fatal to the ox, horse, and dog, as the bite of a deadly serpent. 'In one journey,' he says, 'though we were not aware of any great number having at any time alighted on our cattle, we lost forty-three oxen by its bite. We watched the animals carefully, and believe that not a score of flies were ever upon them.' Man seems quite exempt from any harm arising from its sting, and calves that are *sucking* enjoy a like immunity. It does not startle the ox, as the gad-fly does; but, once stung, it swells under the throat, profuse discharges run from nose and eyes, followed by rapid wasting of the flesh, until the poor beast eventually dies from sheer exhaustion. It is also a curious fact that the antelope and zebra are not injured by its puncture, whereas the ox and horse invariably die.

There lives no greater pest to the wanderer and his horses and mules than the breeze-fly; by *breeze-fly* I mean flies belonging to the genus *Tabanus* (order, *Diptera*, or two-winged), not those of the genus *Cestrus*, with which it is frequently confounded. The latter—

commonly called bot-fly, which is also a terrible pest, alike avoided by both horse and ruminant—deposits its eggs sometimes on the hair, and sometimes underneath the skin; hence animals, guided by a natural instinct, or having been the victims of a past and painful experience, all, at the sound of his dreaded trumpet, make the best of their way to the nearest water, into which they plunge.



FIG. 1.



FIG. 2.

On the contrary, in the breeze-fly we have to do with a veritable *blood-sucker*, more ravenous than would be any winged leech. There are three species, all three by far too plentiful for the comfort of either man or beast, and widely distributed in North-west America. These insects have an apparent ubiquity, and are literally everywhere. Ascend to the regions of eternal snow, there are hungry breeze-flies awaiting your arrival; by the rushing torrent, on the shores of the placid lake, under the deep damp shadows of the pine-trees, or on the open flower-decked prairie, there are sure to be breeze-flies. One barely hears the sound of its 'clarion shrill' and hum of the rapidly vibrating

wings, ere one feels a sharp prick, as though a red-hot blade had been thrust into the flesh. Stab follows stab in quick succession, and unless active measures of defence be resorted to the skin speedily assumes the form of wire-gauze.

Your horses and mules, if you have any, give immediate notice of the enemy, by viciously throwing up their heads and heels, snorting, and very possibly, indeed I may say generally, summarily discharging their loads, be they human or baggage, over their heads. Whether success attends this disagreeable habit or not, in any case a hasty retreat is made for the nearest water, where both man and beast well know the breeze-fly seldom or never follows. I have frequently had a train of pack-mules completely scattered by these formidable pests.

The largest and fiercest is the black breeze-fly (*Tabanus atratus*). Its body is like glossy black velvet, frosted over with a delicate white bloom, like a freshly-gathered Orleans plum; it is about an inch in length; the wings, like pale blue gauze, when at rest are always kept in a horizontal position; the alulets are large and strong. The eyes are exquisitely beautiful, in colour dark-blue, but glittering with the lustre of highly-polished gems, and nearly covering the entire head.

The next in size is the belted breeze-fly (*Tabanus cinctus*), about one-third smaller than its sable relative. It is clad in bright orange livery, banded with stripes

almost black ; and has a most showy appearance, being decidedly the best dressed fly of the family. The eyes are emerald green, and, when viewed in the bright sunlight, have the appearance of being cut into numerous facets.

The third or smallest is the Lined Breeze-fly (*Tabanus lineatus*) ; of a bluish colour, and only conspicuous from having a white line along the top of the head. In this fly the eyes are of bluish-green, and quite as beautiful as in the two preceding.

The lady breeze-fly, I am grieved to say, is far more to be dreaded than her lord. These insects can never, one would suppose, enjoy the luxury and delight, or whatever may be the proper term applicable to such a universal habit as kissing. How could a winged lady, I should like to know, be kissed by a winged wooer, when her lips are a bundle of lancets, six in number, and as sharp as a surgeon's ? True the male has four blade-like instruments arming the mouth, but it is questionable whether he uses them for other purposes, than that of sucking nectar from flowers. The apparatus of the female is beautifully adapted for puncturing the skin, and then pumping up the fluid through the sheath of the lancets, that acts as a tube or canula. It would be of trifling interest to advert more in detail to the minute anatomy of these insects. The rambler alone has an opportunity to investigate the haunts and watch the habits of strange beasts, birds, and insects. To the

anatomist at home, in cosy closet, belongs the task of developing, with scalpel and microscope, the complicated machinery by which life's varied duties are carried on.

The larva lives in the earth, a grub easily dug up in the moist prairie lands; of an elongated sub-cylindrical form, tapering off towards each extremity; its colour a dingy yellow; destitute of feet; having a body divided into twelve segments, each segment being banded with a row of minute horny hooks—an admirable contrivance, enabling it to drag itself along through the earth. The head is horny, and brownish-yellow in colour, also armed with hooks to aid in progression. The pupa I have never seen, but De Geer tells us the pupa of *Tabanus bovinus* is 'naked, incomplete, elongated, sub-cylindrical, with six spines at the end of the body, the margins of the abdominal segments ciliated, and the forehead bi-tubercled.'

Where or when the eggs of the *Tabanus* are deposited is not generally known, but it is more than probable on the stems of plants, to which they are fastened by a glutinous secretion; the grub when hatched, falling on the ground, at once buries itself. Neither is it known how long a time the larva remains in the earth, ere it changes to the pupa form.

I remember once, being busily occupied all day, collecting beetles and other insects, in the dense, shady pine-forests, close to a small stream called the Mooyee,

that flows down the western slope of the Rocky Mountains: boxes, bottles, bags, even my hat, indeed every available locality about my person, was appropriated to the stowage and transport of the proceeds of my hunt. My horse, rather a wild mustang, had been tethered close to the water, and thus kept clear of the breeze-flies during my absence; soon, however, after mounting him to return, emerging from the forest, I came on a small patch of open prairie land, but no sooner was I clear of the timber than the pests were at us. My beast commenced practising every species of jump and leap that it was possible for a horse to execute, and several of them of a nature so extraordinary that one would have thought no animal that ever went on four legs could accomplish; he pranced, shied, kicked, leaped forward, backward, sideways—in a word, performed such demoniacal pranks that, although a practised horseman, I found it a most difficult matter to keep my seat. As a finale, off he went like a mad creature, caring nothing for all my efforts to stop him; then, as if from sheer madness caused by the punctures of the flies, that followed like a swarm of enraged bees, he stopped suddenly short, viciously threw his head between his forelegs, and at the same time elevated his hind ones into the air; the whole being performed with such sudden and savage violence, that I was pitched clean out of the saddle: boxes, bottles, bags, together with all my insect treasures, lay scattered over the prairie; and ere I

could regain my feet I had the satisfaction of seeing him put his legs into the bridle-reins, drag it clean off his head, and, with a snort that sounded mightily like a derisive horse laugh, he galloped off leaving me to my own devices. I mention this little adventure to show how terribly these pests can madden an animal.

From an intimacy by no means sought, or on my part cultivated, with the *Tabanidæ*, or breeze-flies, I am disposed to think the fly called *Zimb*, and described by Bruce, belonged to this family, and was not an *Æstrus*, as many have supposed. Speaking again of the *Zimb*, in reference to the camel and elephant: 'When the first of these animals are attacked, its body, head, and legs break out into large bosses, which swell, burst, and putrify, to its certain destruction.' Just such effects have I again and again seen amongst horses and mules. One mule we had to abandon on the prairie (a disabled foot preventing its travelling any further) was, when we returned for it, so stung by the breeze-flies as to be a mass of small ichorous ulcers from head to hoofs; truly pitiable was the poor beast's plight, its injured limb having precluded all chance of escape from the flies, and, as a mere matter of humanity, it was at once shot. I have also frequently seen tethered horses so injured by the punctures of the breeze-fly as to be rendered useless for many months. Their favourite places for puncturing are on the front of the chest—where the saddle goes—and inside the thighs. If a man were

tied, or otherwise disabled, so that all chance of beating off, or escaping from the breeze-flies was out of his power, I have no hesitation in asserting my firm conviction that they would rapidly kill him.

The illustration (fig. 1)* will give a good idea of the Belted Breeze-fly—a lady charmingly dressed in orange flounced with black, very attractive when you see her sunning herself amid the petals of some prairie flower, but a closer acquaintance destroys the charm, as she soon lets you feel her power of wounding.

Fig. 2 exhibits the proboscis and its armature of six lancets, terminated by two large fleshy lip-like lobes, further protected at the sides by the maxillary palpi.

Travelling in Oregon one constantly finds himself on the banks of a wide glassy lake; gazing over its unrippled surface, the eye suddenly rests on what, to the inexperienced in hunter's craft, appears to be small clumps of twisted branches, or dead and leafless tree-tops, the trunks of which are hidden in the water; but the Indian or 'trapper' discerns in a second that the apparent branches are the antlers of a herd of Wapiti that have been driven into the water by breeze-flies. Wild cattle seek a like means of protecting themselves against such terrible foes. A perfect forest of horns may frequently be witnessed in a pool, but not a vestige of the bullocks, save their noses, kept above water for the

* Page 290.

purpose of breathing. Virgil clearly alluded to the breeze-flies, and not to the *Cestridæ*, when writing about the *Asilus* :—

Through waving groves, where Selos' torrent flows,
And where, Alberno, thy green Ilex grows,
Myriads of insects flutter in the gloom
(*Estrus* in Greece, *Asilus* in Rome),
Fierce and of cruel hum. By the dire sound
Driven from the woods and shady glens around
The universal *herd* in terror fly.

The same thing goes on now as of old : breeze-flies puncture the toughest hides for blood, and as in the days of Greece and Rome, and, it may be, ages and *æons* before that, the 'universal herd in terror flew' on hearing the shrill blast of the breeze-fly's trumpet.

Two more flies deserve a passing notice, as being troublesome to the wanderer's horses and herds, should he possess either or both. These belong to the family *Cestridæ* ; one of the two is terribly dreaded by horned beasts of all kinds, especially bullocks and deer ; if they only hear the sound of its buzzing, off the entire herd scamper, and make their way to the nearest water, into which they plunge up to their necks. The fly's aim is to deposit its larvæ in the skin of the animals back, by puncturing a hole and placing an egg in it ; this egg rapidly hatches, and the grub feeds and fattens in a kind of abscess underneath the skin.

A small hole is always left for the purpose of admitting air for the worm to breathe, and as a means of

escape, when about to assume the pupa condition; the time for this change having arrived, it forces its way out, drops upon the ground, buries itself, by-and-bye to appear as a 'trumpet-fly,' so called from the peculiar note it continually makes whilst pursuing its victims.

I have sometimes killed deer and wild cattle, their backs covered all over with 'worm holes,' as hunters call the the larvæ knobs of the 'trumpet-fly.' Of course the skin is valueless when so punctured.

The second species, also called a trumpet-fly, does not puncture a hole in the animal's skin, but contents itself by glueing the eggs to the ends of the hairs; the animal in licking itself of course conveys these eggs first into its mouth, and thence into its stomach. Once in the stomach, the eggs are soon hatched, and a yellowish white grub is produced, encircled with several rings or bands of minute recurved spines, and further armed with a hook for holding on with to the coats of the stomach, thus anchored they feed and flourish until the period arrives for them to undergo the change from larvæ to pupæ; then they loose their hold, and aided by the recurved hooks, which prevent any retrograde motion, pass on through the intestinal canal, and finally reach the ground with the excrementitious matter, bury themselves, to appear in due course a winged pest. I have thought it best to mention these flies, as the wanderer will the more readily recognise them in the wilderness. I need hardly say there are two closely

allied species of *Estridæ* (*Estris bovis* and *E. equi*) common to England.

Next to the punctures of blood-sucking insects, stings from wasps and hornets are most to be dreaded; there are two species belonging to this spiteful community, the wanderer has to be wary of, when travelling with mules. One a hornet, called by the packers a 'Jack-Spaniard,' that builds a circular paper nest, about the size of a half-quartern loaf, and suspends it from the extreme point of a branch, and as the trails afford nice open avenues for jack-spaniards to cruise up and down in, they usually suspend their nests from the boughs of the trees that hang about six feet from the ground along the trails; of course the mules brush against them as they travel on, an act of rudeness the jack-spaniards invariably resent, and in revenge swarm out to make a savage attack upon the entire train; away go the mules helter-skelter when the hornets sting them, and as the packers pass the angry insects in pursuit of the scattered train, they in their turn, get a taste of the stings. The best remedy when jack-spaniards' nests are plentiful, is for one to ride ahead of the train, and to light smouldering fires beneath the hornet's nests as he passes them, the smoke from which keeps the insects away. Tobacco leaf laid upon a stung part will afford immediate relief, or fat well rubbed in will answer, if nothing better can be procured.

The other torment is a wasp that builds a small paper

nest, seldom larger than a tennis-ball, underneath stones or shelving rocks, in loose stony trails, particularly on hill sides; these small wasps prove very troublesome. If a pack train is travelling up a slope, the mules by displacing the stones constantly destroy these concealed nests, and the insects usually resent the damage done to them by stinging the animals in the flanks, thereby very often causing a mule to kick off its load. On the other hand, if one is riding over stony ground where these 'stone wasps' are plentiful, every now and then you find your horse commence to plunge and kick and become perfectly ungovernable, the cause of which you discover on examination to be enraged little wasps, stinging the animal's flanks. Bacon, or other fat, well rubbed into the stung flanks, affords relief and prevents swelling.

Bites from poisonous reptiles are at all times dangerous, and too frequently fatal in their results. There are few if any remedies of much service if the poison has been absorbed into the circulation, but excision of the bitten part, and severe cauterization, may, if resorted to immediately the wound is made by the serpent's poison-fangs, be attended with success, by removing the poisoned flesh before the vessels can absorb the virus and convey it into the blood. Whisky is said by hunters and trappers to be a specific against the bite of a rattlesnake. The stronger the spirit the better is it suited to effect the cure, and it must be drank until it produces stupor. I myself knew a man drink a pint and a half

of strong whisky before it produced any visible effect, after being bitten in the leg by a rattle-snake, and he perfectly recovered. I knew another man who tried a similar experiment and died, whether from the whisky or the bite of the rattle-snake I am unable to say. It is quite a mistake to imagine rattle-snakes ever jump at or attack a man; they turn and bite if they are trodden on, or a female with young will sometimes strike at you if you pass near her, but according to my experience, the paramount desire on the part of the reptile is to make its escape if possible, when surprised by man.

I have tried again and again to tease a rattle-snake into jumping at me, but never in a single instance succeeded in inducing one to attempt it; they have no power to jump beyond the straitening out of the coils, into which they usually fold themselves when basking in the sun. West of the Rocky Mountains rattle-snakes are in wonderful abundance. I have sometimes seen a sunny slope completely covered with them, coiled up upon every ledge, stone, and bare spot.

The *rattle*, too well known to require any description here, is employed by Indian women and medicine men in cases of 'labour;' it appears to exert a specific effect similar to that of ergot of rye.

In Southern Oregon, California, and Texas, animals whilst grazing, are often bitten in the nose by a large spider that makes a trap-door nest in the ground. The spider either excavates a kind of cave in the earth, or

takes possession of a hole already made, lines it with a thick coating of silky web, and then constructs a trap-door or lid, by mixing earth, web, and some adhesive material together, to accurately fit the entrance to the den; not only does the skilful architect make this wondrous door, but further adds to it a hinge of silken cords, so that the spider can open and shut its door, as best befits its fancy. When hungry the spider pushes open the door, and with its head only protruding, awaits the approach of insects. Woe betide the unlucky grasshopper, beetle, or field-cricket, that ventures near to this ogre's den; seized by the spider, it is dragged into the hole, the door shut fast, and all chance of escape utterly cut off.

As animals browse the herbage, they often put their lips and noses close to, or upon this spider's den, which the spider resents by giving the intruder a nip with its poison fangs. This produces swelling at first of the nostrils and lips, accompanied with a copious discharge from the eyes. This swelling rapidly increases, extends over the face and head, and soon involves the throat and larynx, thus causing death by suffocation. I know of no remedy for the bite; it always, or nearly so, proves fatal; the only remedy is to fire the pasture when the grass is dry enough to burn, and in that manner roast the spiders in ovens of their own contriving.

The hunter and emigrant on the Western prairies, is often terribly bothered in the fall of the year, by a

troublesome little pest, called a *deer-tick*. I have myself suffered a great deal of annoyance from these plagues; if by chance you sit down to rest, or walk amongst the fallen leaves in the autumn, you will most probably feel when you arrive at your camp, sundry spots upon your body commence to itch; scratching only aggravates the mischief. One naturally searches for the cause; then you will observe at every itching place a small black speck a little larger than a pin's head. This is a 'deer-tick' with all its anterior parts buried in your skin. A novice would be disposed there and then to pinch the intruder out. An experienced wanderer would know, if he did, that the head of the tick would be left behind, and cause a nasty irritable wound. 'What would he do?' Why, take a leaf or two of tobacco from off his plug, wet it, and lay it carefully over the tick, and in about half an hour remove the covering to discover the result, which would be, that the blood-sucker had wriggled clear from its hold, and was either dead, or remarkably sick and stupid. By adopting this simple expedient, no ill effects follow the puncture made in the skin.

I have very frequently discovered blood and frothy material issuing from the mouths of mules and horses, the animals so affected, clearly showing by constantly champng and twisting about the lips, that something was wrong in their mouths; on examining into the matter I generally find one and sometimes more leeches,

sticking on to the lining membrane of the cheeks, or underneath the tongue.

The blood-suckers fasten on to the mouth of the animal whilst drinking, and if not discovered and removed, cause very serious and often dangerous results. It is by no means an easy matter to pull the leeches off; their bodies are slippery, and animals dislike to have their mouths meddled with, even if it is to do them a service. The best thing is a handful of salt placed on the horse's tongue; it rapidly dissolves over the mouth, and at once compels the leech to loose its hold and fall out.

CHAPTER XIX.

Hints on Taxidermy—What tools to carry—A Fall-trap—How to Pack the proceeds of the Hunt—The End.

MANY wanderers may perchance have a taste for natural history, and to those who have only the tiniest spark of inclination pointing in that direction I say by all and by every means cherish and cultivate it; you cannot imagine how many hours may be pleasantly and profitably wiled away by collecting the living things, and plants too, if you are botanically disposed, met with from day to day. Preserving birds' and animals' skins is a most simple process, and to dry, pack, and either bring or send home insects, reptiles, and the various tenants of the salt and fresh waters, needs only a little care and skill, when the right way of doing it is put into practice. I shall first describe the plan I always follow when fitting out, and then endeavour to give a few simple directions, which I think will enable any person to become an amateur taxidermist, sufficiently skilled, however, to preserve and transmit whatever may be collected safely to England or elsewhere.

For tools, go to a saddler, and get him to make

a leather case, pig-skin is best, two feet six inches long and eight inches wide. A pocket must be made at one end, four inches in depth and the width of the case, and two flaps of thinner leather should be sewn down each side, to fold over the contents in the centre of the case, and extending from end to end; a leather strap $1\frac{1}{2}$ inch wide must be sewn at intervals, so as to form loops of different widths; a surgeon's pocket-case will be a capital pattern to copy from; this case is of course intended to roll up. Your case completed, go to a surgical instrument maker, and purchase two pairs of scissors, a four-bladed penknife, a strong scalpel to shut like a pocketknife, a pair of bone nippers, a few bent needles, and two pairs of strong forceps made to close with a slide; these will be found of immense use in skinning. You will not require any other instruments. Add to these things a couple of camel's hair brushes and a glass syringe, and your skinning gear is completed. Go next to a worker in tin, and get him to make a shallow tin box, which must fit the pocket in the leather case. This box must be divided into three compartments, one large and two smaller ones; the larger fill with powdered arsenic, the two smaller fill, one with camphor and the other with bichloride of mercury, commonly known as corrosive sublimate. A thin cake of common soap should be carried in the division containing the arsenic, and a stock of cotton wool and tow packed in a box must not be forgotten.

From the chemist purchase a two-ounce bottle, stoppered and 'capped,' and get it filled with chloroform; also another bottle with a wide mouth, not too large, say a pint size, and have a good bung fitted to it, the bung to be tightly covered with leather, tied to form a knob to catch hold of. Procure also ten or a dozen small sponges, a gross or two of nested pillboxes, and as much camphor, sublimate, and arsenic, as you think requisite; a pound or two of parchment shavings for labelling, and a few gallons of methylated spirit, put up in gallon tins with screw stoppers. If you are disposed to go to work on a large scale, you will find a dozen quart wide-mouthed stoppered bottles packed in cases with wooden divisions, each case to contain four bottles, very handy, but of course all those are matters which must be regulated by the requirements of the collector.

Collecting boxes, arsenical soap, and cork for pinning out insects on, I look upon as useless incumbrances. If there is a compound to be found more unchemical in composition, more useless and less adapted to serve the purposes for which it is made and employed than another, surely that compound is arsenical soap. Why persons in books on taxidermy invariably advise others to use this abomination I cannot imagine.

Let us suppose ourselves in the wilds, and to be occupied in preserving the proceeds of our various captures. We begin with a bird; when you shoot it carefully look for the shot-holes, and plug them with

bits of cotton wool, at the same time place a piece of wool in the bird's mouth, and with a twig push it down the throat. Birds of delicate plumage are constantly spoiled by neglect of this precaution. I never, if I can help it, skin a bird or an animal until it is cold. To skin a bird, first break the wing-bones close to the body, the wings then drop out of your way; divide the skin down the breast to the vent; skin out both legs and divide the bone at the thigh-joint; turn the skin carefully over the rump and sever the backbone a little beyond the ends of the tail feathers; strip the skin along the back to the wings, divide the bones of these close to the body, and turn the skin inside out, drawing it over the head so as to expose the skull; divide the neck from the base of the skull, and remove the brain. The bones of the legs and wings must next be cleaned, dusted over with arsenic, bound round with cotton wool, and drawn back into the skin, the fat must be cleaned from off the rump and skin, the skin brushed over with powdered arsenic and turned back again into its proper form. The eye I always remove from the outside, by placing a needle through it, and jerking it out, then I fill the orbit with wool dusted with arsenic, and adjust the lid. My own experience tells me, that learning to skin a bird by following printed directions is at all times a most unsatisfactory proceeding; hence I say, although I have given these brief rules, go to a bird-stuffer before you start *wandering*, and get a few lessons; it will help

you more than a month's reading. The eyes finished, fill the skin moderately with wool, but on no account stretch it. Place it head downwards in a paper cone and let it dry, tie a bit of parchment to one of the legs inscribed with the sex, and a reference number to your journal and notes. Animals are skinned much the same way as birds, only in the latter be sure to remove the bone of the tail, and replace it with a stick.

Carefully remove all the flesh from the leg and thigh bones, scrape every particle of fat clean away from the skin, and use every care not to stretch or over fill the skin with cotton wool; for very large animals dry moss or grass answers quite as well as wool or hemp. The nose, feet, and inside of the ears should be brushed over with a strong solution of bichloride of mercury. I always carefully measure both birds and animals before I commence to skin them, and enter the results, together with the sex, colour of the iris, and where killed, in my field note-book. In the preservation of small mammals, birds, or reptiles, in spirits of wine it is all essential to make an incision into the chest and abdomen, and to inject with the glass syringe a saturated solution of bichloride of mercury. Often if this precaution is neglected decomposition takes place, the abdomen swells from the contained gases, and by and by bursts, spoiling together your spirit and specimen. Snakes are best preserved in spirits, and their coloration should be very carefully noted before immersion, because few if any

snakes retain the same brilliancy of marking after death or soaking in spirits that they had whilst alive, and very many colours entirely change or disappear altogether. Lizards, if spirits should be scarce, can be readily skinned and dried just in the same manner as you skin a mouse or a squirrel.

Fish are by far more valuable for natural history purposes, if preserved in spirits, than they are dried and brought home as skins; but to preserve large fish a great quantity of spirit is requisite, and this makes the process very costly and the package very cumbersome. If you do feel disposed to go in for whole preservation, it is just as well to know how it can be successfully managed. The fish to be preserved should be well soaked for some days in a pan or small cask of strong spirits of wine, not forgetting the caution to inject the viscera thoroughly with the mercurial solution. A tin box should be made in the meantime to hold as many fish as you may desire to pack. Take the fish out of the soaking pan, and wind each one carefully round with hemp or rag, taking care to affix to the back fin a small tablet of soft lead, on which a figure must be stamped or scratched, to correspond with a similar figure in your note-book; lay the fish so prepared one upon another in the tin box, and pack them securely round with cotton wool, so that there is no possibility of their moving or shifting about. Now fill the tin with spirit and solder on the cover. Let the tin remain upon a table

for a day or two, to make sure there are no leaks, and then get it fitted into a strong wooden case, firmly screwed together. Fish so prepared I have brought through the tropics to England, without their sustaining the slightest damage. If you wish to dry them, the plan I have found to answer best is to remove a slice from one side of the fish, and then to scrape away all the flesh from the remaining skin, and to dust the skin well over with dry arsenic and pin out the fins on pieces of cork placed underneath them.

Crabs should be plunged into fresh water, first to kill them and secondly to remove all the salt. If this is not properly attended to they absorb moisture and decompose after drying; large crabs must have the under part removed, just as if you were going to eat them, and the shell must then be thoroughly cleaned out and well washed with mercurial solution; the large nipper claws must have a hole bored into them and all the flesh removed; then the entire crab must be soaked for some days in cold fresh water, which will need to be frequently changed; lastly, place the shell in a proper position and dry it slowly.

I find it a very good plan to dip star-fishes into boiling water for a few seconds before soaking them in cold; it prevents in a great measure their tendency to break and soften after drying. In collecting and preserving uni-valve shells always be most careful not to lose or destroy the operculum, it is of the utmost importance in defining

species. The operculum is the covering which shuts up the mouth of the shell when the owner retires into its quarters; a familiar example will be found in the black patch which you pick off, prior to twisting out a periwinkle with a pin. The best plan is to fill the shell with cotton wool after removing the inmate, and then to gum the operculum to the wool. In bivalves care should be exercised not to break or injure the hinge. Never place shells in boiling water; it always injures them. The fish, if marine, soon die in cold water, and then the valves are always wide enough apart to admit of the fish being easily extracted.

In using bottles for the preservation of anything in spirits, it is not by any means an easy job to prevent the spirit from evaporating, even though you have ground stoppers in your bottles. With corks I find the best plan is first to cover the cork, after fitting it tightly into the bottle with white lead such as is employed for making paint. When dry I give it a second coat; over this second coat, whilst the white lead is wet, I tie a covering of sheet gutta percha; when the lead has become hard I paint the covering with thick black varnish. For stoppers I adopt the same plan, only I add to the white lead a small proportion of linseed-flour to give it a firmer consistence. Stoppers and corks so covered I find to be equal to any temperature, and they are damp proof. Cheap solutions, and jars with screw covers, I do not believe in; I always find the jars leak and the specimens

spoil in all solutions recommended to economise spirit. My advice is, have nothing whatever to do with either.

It may be useful, when collecting specimens of natural history, to know the way to construct a fall-trap. This form of trap is employed by Indians and trappers for the capture of sables, pine martens, foxes, and other fur-bearing animals. Steel traps are likewise employed. As these are only strong rat-gins, and set in a similar manner, I need not describe the plan of setting.

Two or three different kinds of fall-traps are employed to catch pine martens, but we will, in the first place, select this pile of rocks to set an imaginary fall-trap; I can track at least a couple of martens, which are in all likelihood concealed in the clefts. The fall-trap is an Indian invention, and a very ingenious one into the bargain, as we shall see by-and-by. To commence, we must build a half-circle, with large stones, to the height of about three feet; this done, we next procure a tolerably heavy tree, drag it to the stone building we have constructed, and lay it across the entrance. The heavy end should be the furthest away, the lighter end we poise carefully upon an arrangement of peeled sticks. As a familiar example of what I mean, I may instance the figure-of-four trap used by boys for catching small birds. This contrivance and one end of the tree or 'fall' are together supported on a smooth stick, which is built in amongst the stones composing the half-circle. This support

stick must project horizontally from the centre of the hollow of the wall, at a height of about three feet from the ground; it needs to be firmly fixed, and must be tapered to a point, and polished as smooth as an ebony ruler. The length of this support has to be regulated by the depth of the side walls; its pointed end ought to be just six inches within the entrance walls, against the ends of which the tree or 'fall' traverses. A tempting bit of rabbit or grouse carefully skinned, for the marten is most fastidious in its tastes—if the meat is at all tainted or dirtied in the preparation it is useless as a lure—is securely fastened to a loop of cord made from the inner bark of the cedar tree (*Thuja gigantea*); this loop is slid upon the supporting stick, and pushed on until it reaches the hindermost part of the wall. Now we make the figure of 4, which rests upon the horizontal bar, and at the same time bears up the tree or 'fall.' The figure of '4' is easily made; the vertical piece has two notches cut in it, one in the centre for the horizontal piece to rest and fit in, and a second at the top to receive the end of the oblique piece, which is cut to a wedge shape at both ends. The horizontal piece has one notch to take the end of the oblique; on the other rests the fall. We have set our trap, and now, as a final process, we walk backwards from it for some distance, and carefully brush away every trace of our footprints with a pine branch, and here for the time we must leave it. We shall see how it acts when we again visit the trap.

The 'fall' is down, and underneath it, crushed and lifeless, is stretched a fine male marten. If you observe the position the body lies in, it will explain to some extent the care that was needed in rightly adjusting the length of the support in reference to the 'fall.' The tree has dropped upon the marten immediately behind the shoulders, and so caused instant death; and here let me explain how the trap acts. The marten, hunting about, suddenly sniffs the dainty bait suspended from the horizontal stick; approaching the trap, and having satisfied its naturally suspicious nature that there is nothing very formidable in a pile of sticks and stones, and from our precaution of brushing out the footprints, it is unable to scent the presence of an enemy, ventures to creep under the 'fall,' and enter the semi-circle of stones; then reaching up, the marten seizes the bait, and struggles with all the strength it can exert to pull it down, but finding this is not to be accomplished, next tries what backing out and tugging the coveted morsel after it will do. The stick, if you remember, was made as smooth as an ebony ruler, and so the animal finds the bait and loop easily traverses it towards the entrance of the trap; but when half the marten's body is without the 'fall,' the loop comes against the vertical stick composing the figure of 4, which rests upon the stick along which the victim is impatiently dragging the loop to which the bait is fast. Finding this unlooked-for obstruction makes him irritable, and

so he concentrates all his energies for a sudden jerk. 'Tis done, the support of the 'fall' tumbles in pieces to the ground, and the heavy tree slips down suddenly upon the marten's back. You will thus observe, that the grand secret in setting a 'fall' trap of this pattern is so to adjust the figure of 4 upon the stick from which the bait is suspended, that when the final tug is made, nearly two-thirds of the marten's body shall be outside and clear of the tree placed for the purpose of crushing its life out.

When collecting insects, I carry the wide-mouthed bottle fitted with a bung, into which I place a small sponge wetted with chloroform, and every insect I catch is at once dropped into this fatal 'omnium gatherum.' I do not turn them out or examine them until my return to the camp. Then I examine the proceeds of the hunt very carefully, drop all the beetles into a solution of bichloride of mercury, not too strong, because chloroform does not invariably kill them, but only produces temporary stupor; the two-winged and other flies I pack in pillboxes, the butterflies I dry between bibulous paper with their wings folded, then I pack them flat in triangular paper cases, gummed up securely, and labelled in reference to my note-book. The beetles after a day's soaking I pack in paper tubes, made by rolling paper round sticks of different sizes, just in the same manner as rocket and squib cases are manufactured. Packed in this manner the antennæ and legs are safe from break-

age; when I have filled a number of cases I fasten up the ends and place them vertically in a box. Secured in this way you might fling a box of beetles from the top of the monument, and not injure a solitary specimen. To unpack these cases you have only to lay them upon damp sand for a night, and they unrol without the slightest trouble. Pinning any kind of insect in order to secure it for transport is a bad and useless plan, and one I have abandoned for many a year; if properly damped all insects can be as readily pinned out after they are brought from abroad, as if put into position immediately after death. The one grand secret to be observed in packing specimens of natural history for transport, is to obviate every chance of movement; if things are so packed that shaking about is impossible, there is no fear of breakage. I brought my extensive collection from the Rocky Mountains to England, and broke only two bottles, simply by taking a little extra pains with the packing.

And now, fellow wanderers, good-bye. If the practical hints I have given in these pages shall prove in days to come useful to any persons who are far away, whether absent from choice, enjoying the rough yet pleasant life of the wanderer, or driven by hard necessity to toil in the struggle for existence as settler or emigrant, in either case I shall have achieved all I desired to do.

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LONDON

PRINTED BY SPOTTISWOODE AND CO.

NEW-STREET SQUARE